

**Environmental Monitoring,
Evaluation, and Mitigation Plans:
An Assessment of Six Years Experience**

April 2000

Task Order No. 25
Contract No. PCE-I-00-96-00002-00

Environmental Monitoring, Evaluation, and Mitigation Plans: An Assessment of Six Years Experience

By
Dr. Joy E. Hecht
and
Dr. Malcolm K. Marks

April 2000

For
Office of Sustainable Development, Bureau for Africa
U.S. Agency for International Development

*Environment Policy and Institutional Strengthening Indefinite Quantity Contract (EPIQ)
Partners: International Resources Group, Winrock International, and
Harvard Institute for International Development*

Subcontractors: PADCO, Management Systems International, and Development Alternatives, Inc.

*Collaborating Institutions: Center for Naval Analysis Corporation, Conservation International, KNB Engineering
and Applied Sciences, Inc., Keller-Bliesner Engineering, Resource Management International, Inc., Tellus Institute, Urban
Institute, and World Resources Institute*

Table of Contents

Table of Contents	i
List of Acronyms	iii
Executive Summary	v
Country Experiences	v
Synthesis and Conclusions	vi
 1. Introduction.....	 1
1.1 About EMEMPs.....	1
1.2 About this study	2
 2. Madagascar	 4
2.1 Mission and EMEMP Overview	4
2.2 Process of the CAP EMEMP	5
Environmental Analysis and Initial Environmental Evaluation	5
Programmatic Environmental Assessment–1996	6
CAP EMEMP methodology	7
2.3 Discussion	9
2.4 Where to go from here?	10
 3. Malawi.....	 12
3.1 Mission and EMEMP Overview	12
3.2 Implementation of the EMEMP	13
Catchment Work.....	13
Environmental Information System.....	15
Other activities.....	16
3.3 Discussion	17
Funding for EIS Work	17
Working with the Malawi Government.....	18
Scope of Environmental Monitoring	20
3.4 Where to go from here	20
 4 Uganda	 22
4.1 Mission and EMEMP Overview	22
4.2 EMEMP Implementation	23
Monitoring of Rose-Growing Activities.....	24

Monitoring Maize and Bean Cultivation	26
Links to other projects	27
4.3 Discussion	27
4.4 Where to go from here	28
5 Ghana	30
5.1 Mission and EMEMP Overview	30
5.2 EMEMP Implementation	31
5.3 Discussion	33
5.4 Where to go from here	35
6. Synthesis and Conclusions	36
Narrowly focused research	37
In-depth research program	37
Link the work to broader EIS work	38
Launch a broad monitoring activity within the USAID Mission.....	39
Support development of a national EIS	40
Just mitigate	40
Conclusions	41
List of Projects for which EMEMPs Were Required	42
References	44
List of People Contacted	48
General Contacts	48
Madagascar	48
Malawi	49
Uganda	50

List of Acronyms

AID	Agency for International Development
ANEP	Agriculture Nontraditional Export Promotion Project (Uganda)
ANGAP	National Association for Protected Area Management (Madagascar)
APE	Action Program for the Environment (Uganda)
ASAP	Agricultural Sector Assistance Program (Malawi)
ASF	areal sampling frame
CAP	Commercial Agriculture Promotion Project (Madagascar)
COBS	Program to Conserve Biodiversity for Sustainable Development (Uganda)
CSP	country strategy plan
DANIDA	Danish International Development Agency
DREA	Department of Research and Environmental Affairs (Malawi)
EAD	Environmental Affairs Department (Malawi)
EPA	Environmental Protection Agency (Ghana)
EPIQ	Environmental Policy Indefinite Quantity Contract
EIR	environmental impact review
EIS	environmental information system
EMEMP	Environmental Monitoring, Evaluation, and Mitigation Plan
EPC	Environmental Protection Council (Ghana)
EU	European Union
FEWS	Famine Early Warning System
GERMP	Ghana Environment and Resources Management Project
GIS	geographic information system
GMU	Grants Management Unit (Uganda)
IEE	initial environmental evaluation
IDEA	Investment in Developing Agricultural Exports Project (Uganda)
KEPEM	Knowledge and Effective Policies for Environmental Management Project (Madagascar)
LDI	Landscape Development Interventions Project (Madagascar)
LIPOC	Land Information Project Operating Committee (Ghana)
M&E	monitoring and evaluation
MEMP	Malawi Environmental Monitoring Project
MUIENR	Makerere University Institute for Environment and Natural Resources
NEAP	National Environmental Action Plan
NEIC	National Environmental Information Centre (Uganda)
NEMA	National Environmental Monitoring Agency (Uganda)
NGO	non-governmental organization
NPA	non-project assistance
NTAE	non-traditional agricultural exports
ONE	National Environment Office (Madagascar)
PAAD	Program Assistance Approval Document

PEA	Programmatic Environmental Assessment
RP	results package
SAVEM	Sustainable Approaches for Viable Environmental Management Project (Madagascar)
SO	strategic objective
TIP	Trade and Investment Program (Ghana)
USAID	United States Agency for International Development

Executive Summary

Environmental monitoring, evaluation, and mitigation plans -or EMEMPs—were initiated by USAID early in the 1990s to address possible environmental impacts of projects and policy reforms. They began as a response to the 1991 amendments to Section 496(h)(2)(B) of the Foreign Assistance Act, which specified that “policy reforms shall also include provisions to protect...long-term environmental interests from negative consequences of the reforms.” More specifically, they responded to two particular needs. One was the development of umbrella projects which involve a number of smaller activities, defined over the life of the project and often funded and implemented by the host country government with local currency. The second was the introduction of policy reforms or project activities designed to promote market reform, encourage private sector development, or strengthen trade and investment. In both cases, it was not possible fully to anticipate the environmental impacts of the upcoming activities, so designing them to prevent possible harm was not an option. The EMEMP requirement made it possible to allow such activities to be implemented even without full advance knowledge, by ensuring that the environmental impacts would be tracked and addressed when – or if—they surfaced.

This study has been undertaken in order to assess how well EMEMPs have met these needs, and to see what lessons can be learned from the past six years’ experience about how to address these issues in the future. It focuses on the experiences of four countries, Madagascar, Malawi, Uganda, and Ghana. It is in no way a formal evaluation of the EMEMPs in those countries. Rather, the purpose of the study is for AID to learn from its experiences, and develop a richer understanding of how effectively the EMEMP approach has been able to address the concerns which motivated it. This study should also provide some understanding of how or whether EMEMP activities can be linked to other USAID monitoring, evaluation and indicators work, or to the development of national environmental information systems in government.

Country Experiences

The four countries considered have had quite different experiences with EMEMP implementation. The Madagascar environmental monitoring work, which was not clearly linked to the EMEMP requirements, focused primarily on the environmental impacts of a series of road rehabilitation activities. The project in question designed an environmental screening form to be completed for each road segment, through which they specified how the road was to be designed in order to avoid environmental harm. At various points during and after construction, the project visited the sites to ensure that the environmental guidelines were being implemented properly.

EMEMPs dealing with the environmental impacts of expanded trade and agricultural activity were much more difficult to structure. In Malawi, the issue at hand was the environmental impact of increased production of burley tobacco. The EMEMP involved an in-depth research program which was to identify the water quality and soil erosion implications of expanded tobacco cultivation. However, the monitoring program proved to be too detailed, too complicated to

administer, and too far beyond the analytical and institutional capacities of the government agencies involved. Alternate activities were then attempted in Malawi. One was to link to the development of a national EIS; while this may have led to some interesting analytical work, it is not clear that it contributed to broader EIS development, nor did it address the environmental concerns which led to the EMEMP. Another was to do a rapid interview- and statistics-based assessment of the environmental impacts of tobacco cultivation in a few villages. The results are not yet in on this, but it may be a useful way to meet AID's basic information needs – albeit without building capacity in the government or linking to broader information systems work.

In Uganda the concern was again the environmental impacts of increased agricultural activity, this time through introduction of new export crops and expanded production of traditional crops. The project uses a very simple screening form to flag impacts from each farmer it works with. It has also produced two monitoring and evaluation studies, one on rose growing and one of the expansion of traditional cultivation, in which environmental impacts are among the many issues addressed. These studies rely on the farmers' or growers' evaluations of their environmental impacts, without field verification. The review prior to its second phase offers an opportunity to strengthen the environmental component, although Mission staff are not giving this high priority at present.

The Ghana EMEMP was never implemented. Its original design was similar to the research undertaken in Malawi, with the government taking full responsibility for funding and implementation. However, the government never fulfilled this responsibility. Although implementation of the EMEMP was a condition precedent for budget support provided through the project, the Mission never chose to exercise those conditionalities. Five years after its original conception, the Mission decided that in its future trade activities it would focus directly on preventing or mitigating anticipated environmental impacts, without any attempt to determine whether they were, in fact, occurring.

Synthesis and Conclusions

The assessment of the four countries does not lead to a simple answer about how to monitor or mitigate the environmental impacts of policy reform or increased private sector activity. Rather, it shows a number of different models, most of which have been tried, and most of which might be considered by missions confronting these issues in the future:

- Take a very narrow focus in a rapid monitoring project, as in the case of the village studies in Malawi. Such studies may be a cost-effective way to answer questions of interest to AID, as long as they are not linked to broader capacity-building, EIS work, or other government or AID activities which could make them less efficient.
- Undertake in-depth research to identify causal links between AID activity and the environment. This strategy – implemented in Malawi and proposed in Ghana – seems to be too cumbersome to address AID interests, but not focused enough on government interests for them to make a commitment to its implementation.

- Link the AID research questions to ongoing EIS development. This was proposed in Ghana, but was not tried in any country. If the national EIS is already up and running, it may be an effective way to take advantage of existing government capacity. Where the EIS is still in preliminary stages of development, however, it may raise the same management problems as in-depth research.
- Undertake the EMEMP as part of a mission-wide monitoring activity. This may raise issues within the mission of how to ensure that those whose activities actually cause environmental harm must take responsibility for those impacts. It will also raise the question of whether it is reasonable to make the significant investment in information systems which it would require, yet target it solely at AID rather than government information needs.
- Support development of a national EIS. This will not provide immediate answers to AID questions, but will help build infrastructure that will help AID, other donors, and the country in the long run.
- Just mitigate. This is appealing because it avoids the use of resources to establish elusive causal relationships, and focused on simply ensuring that environmental harm is not occurring. The risk is that the mitigation activities may become totally disconnected from the suspected environmental harm which led to them, and so may lose their focus.

Missions should consider all of these options, including combinations among them, in the light of the experiences of the four countries studied, in order to decide which approach may best meet their own needs and suit their own situations.

1. Introduction

1.1 About EMEMPs

Environmental monitoring, evaluation, and mitigation plans –or EMEMPs – were initiated by USAID early in the 1990s to address possible environmental impacts of projects and policy reforms. ¹ They began as a response to the 1991 amendments to Section 496(h)(2)(B) of the Foreign Assistance Act, which specified that “policy reforms shall also include provisions to protect...long-term environmental interests from negative consequences of the reforms.” More specifically, they responded to two particular needs. One was the development of umbrella projects which involve a number of smaller activities, defined over the life of the project and often funded and implemented by the host country government with local currency. Since the activities are not identified when the IEE is prepared, the EMEMP serves to address possible environmental impacts as activities are designed. The second was the introduction of policy reforms or project activities designed to promote market reform, encourage private sector development, or strengthen trade and investment. While these reforms or projects are not directly related to the environment, the economic activity which they promote could cause indirect environmental harm. The EMEMP is a process for identifying and responding to the environmental impacts of such reforms or projects as they emerge over time.

“EMEMPs” are not a precisely defined entity. Rather, the EMEMP label has been used quite loosely to refer to a range of activities to identify, monitor, or mitigate environmental impacts of USAID activities. A study carried out when EMEMPs were a new concept (Hecht 1994) found that a number of elements were part of the EMEMPs proposed at that time:

- analysis of the anticipated impacts of the project;
- analysis of which data will indicate whether those impacts are occurring;
- determination of base-line data needs
- setting of a time-frame for monitoring; when it must begin, when impacts should be observable, for how long it must continue;
- identification of primary and secondary data sources;
- decision-making about the source(s) of funding for EMEMP;
- preparation of a plan for data collection and processing;
- specification of how data is to be analyzed and by whom;
- anticipated mitigation needs (what will be done if harm occurs, who will do it, who will pay for it?);
- establishment of links between the EMEMP and host government system; and
- establishment of links between the EMEMP and other USAID activities.

¹ See Hecht, August 1994, for further detail on the origin of EMEMPs.

These do not constitute a definition of an EMEMP, nor were all EMEMPs expected to include all of them. Rather, each EMEMP has served different purposes and responded to different needs, incorporating these elements as appropriate to the context.

Thus the EMEMP, while not replacing the initial environmental examination (IEE) or other more detailed environmental assessments, often anticipates the environmental impacts which could result from the project. Where the EMEMP is called for to address environmental impacts of small-scale sub-activities to be designed during the life of the project, its implementation will necessarily involve individual prospective impact assessments of some sort for each of those sub-activities as it is developed. The EMEMP document also typically describes how anticipated impacts will be monitored to determine whether they actually occur, an evaluation of the monitoring results, and what would be done to respond to (mitigate) impacts if they do indeed occur. The monitoring component of the EMEMP differs from the project M&E system in that it focuses on incidental environmental impacts, not on the direct objectives of the project. These two monitoring systems could, of course, be linked, but their foci are different.

The EMEMP is not likely to include strategies to prevent environmental impacts from occurring in the first place. As described in Hecht (1994), where it is possible to identify possible harm and prevent it, the project would simply be modified before implementation and an EMEMP might not be needed. The need for an EMEMP arises when it is not clear what the harm will be, or whether any harm will even occur, so preventing it from the start is not practical.

1.2 About this study

This study has been undertaken in order to assess how well EMEMPs have met the needs for which they were created, and to see what lessons can be learned from the past six years' experience about how to address these issues in the future. It focuses on the experiences of four countries; Madagascar, Malawi, Uganda, and Ghana. It is in no way a formal evaluation of the EMEMPs in those countries. Rather, the purpose of the study is for AID to learn from its experiences, and develop a richer understanding of how effectively the EMEMP approach has been able to address the concerns which motivated it. This study should also enable AID to get a better sense of how EMEMP activities can be linked to other USAID monitoring, evaluation and indicators work, for example through the mission-level R4 processes, the SO monitoring and evaluation systems, and so on.

To address these questions, the report considers a number of issues:

- how effectively each of the EMEMPs has accomplished its own goals, and the determinants of their effectiveness;
- the sustainability of the EMEMP process within reengineered missions;
- links between the EMEMP and the country strategy planning process;
- links between the EMEMP and government processes including implementation of the NEAP and development of national environmental information systems; and

- recommendations for future environmental monitoring and mitigation activities, with particular emphasis on their links both to USAID's strategic planning processes and to host country organizations including government.

The study was conducted through review of documents available in Washington and visits to Madagascar, Malawi and Uganda. The report describes in some detail the EMEMP experience of the three countries visited, and of Ghana, which the team was unable to visit but for which enough documentation has been obtained to present an interesting story. The description of each country addresses several topics; the overall approach of the mission, the implementation of the EMEMP, the issues raised by the EMEMP experience, and where the mission may want to go next in the area of environmental monitoring and mitigation. The report then presents a synthesis of the key issues and suggests lessons which may be learned about how to address the environmental impacts of policy reform in the future.

2. Madagascar

2.1 Mission and EMEMP Overview

The USAID mission in Antananarivo is very conscious of the lead role it plays among donors in Madagascar in linking biodiversity conservation to development. The sensitivity of the conservation issues, on the one hand, and the need to ensure development aims, on the other, mean that mission personnel, especially those working in SO3–“Biologically diverse ecosystems conserved in priority conservation zones”–continually reflect on optimum ways to achieve development objectives with as little negative impact on the environment as possible. Much discussion also centers on how to prevent or mitigate undesirable environmental impacts of development activities.

Madagascar’s EMEMP was required for the \$29 million Commercial Agriculture Promotion project (CAP–FY 1994 through 1999). CAP was designed to increase marketed agricultural production in two high-potential zones in the regions of Mahajanga and Fianaratsua. It has three components: agribusiness support services, input supply business fund (ISF) and a local currency fund. The original concept for the EMEMP was formally approved in February 1994 as part of the environmental implementation requirements of the project. Thus, in theory, the USAID Mission in Madagascar has been involved with the EMEMP process since this time. However, the EMEMP trail in Madagascar has been tangled and complicated as shown by relevant literature and intra-agency memos dating from 1995 through mid-1997.

While CAP was being designed, USAID had two other ongoing natural resource management projects, Knowledge and Effective Policies for Environmental Management Project (KEPEM) and Sustainable Approaches for Viable Management (SAVEM). KEPEM (1993-1997 plus a further extension) is a combined project and NPA activity that encourages policy and institutional changes aimed at increasing the sustainability of Madagascar’s conservation activities. Its main activities support the National Environment Office (ONE) in the implementation of the National Environmental Action Plan (NEAP); facilitate local NGO activity through policy and regulatory reform; and strengthen sustainable resource-based income through pricing reform and the establishment of an endowment fund for financing environmental activities. SAVEM (1991-1998 plus a further extension) focuses on developing sustainable practices for the management of protected areas and thus works closely with the National Association for Protected Area Management (ANGAP) and ONE to develop management and national environmental monitoring capacity.

Madagascar now has substantial environmental monitoring capacity, as a result of the successful training of many ANGAP staff, at both the central and regional levels, in GIS and remote sensing. The majority of this capacity building came through SAVEM working in partnership with international NGOs in integrated conservation and development projects. With the assistance of SAVEM, and thanks to the expertise fielded by the international NGO PACT, Madagascar has developed comprehensive baseline and trend information on environmental features of concern to

biodiversity conservation, such as bushfires, forest clearance, and slash and burn agriculture (*tavy*). It has also developed highly competent personnel in this field and the Mission anticipates that environmental monitoring activities will become sustainably integrated into the general activities of relevant government departments.

During the past 18 months, USAID activities have evolved considerably. KEPEM and SAVEM are finishing up and the latter, in particular, has undergone a pretty much seamless transformation into the activities of MIRAY and the Landscape Development Interventions (LDI) project. USAID continues to provide assistance to ANGAP (mostly via MIRAY), as well as to ONE. Support to ONE in the field of environmental policy is to be strengthened and complemented in the near future by the ecological monitoring support package under the EPIQ IQC (RP4). Major activities of EPIQ will include assisting national partners develop a “State of the Environment” report as well as helping to further institutionalize environmental monitoring activities.

CAP is due to close in June 1999. However, LDI will continue certain activities, such as overseeing road users associations and helping develop such conservation-oriented enterprises as essential oils and organic crop producers. Additionally, at the time of the mission in February 1999 there was discussion of the possibility that CAP would be permitted a six-month no-cost extension.

2.2 Process of the CAP EMEMP

Environmental Analysis and Initial Environmental Evaluation

The CAP Environmental Analysis (Loken 1993), called for an EMEMP which, in addition to monitoring the impacts of CAP itself, was also supposed to track the Market Infrastructure Expansion Project and the Madagascar Agricultural Export Liberalization Support Project. CAP contractor personnel were to have overall responsibility for the collection of environmental monitoring data and to undertake any mitigation work that might become necessary. Loken’s report was followed in 1994 by an Initial Environmental Examination (Knausenberger, 1994). This recommended a series of actions for the three major components of the project:

- Component 1, the Agribusiness Support Services, was not expected to have any negative environmental impacts, except for certain aspects of the marketing service activities, especially the product transport system. Thus the IEE called for a Programmatic Environmental Assessment (PEA) to further analyze the product transport services, and for the EMEMP to monitor product storage or processing services.
- Component 2, the Input Supply Fund, was felt to have no immediate major negative environmental impacts but possibly to have the potential for long-term environmental and human health impacts associated with agriculture activities. To mitigate against such impacts the government, with the help of the CAP project, was to put in place an EMEMP.
- Component 3, the Local Currency Fund would normally fall outside of Reg. 16. However, since missions are expected to take responsible environmental safeguards and pay attention to host country environmental protection and mitigation procedures, the Local Currency

Fund was included in the IEE. The infrastructure improvement component of the project was still to be designed, and hence it was to be thoroughly analyzed by the PEA.

The IEE recommended that the EMEMP be integrated with the project's monitoring and evaluation (M&E) system since the same data needs were anticipated for both. It also recommended that the EMEMP link CAP with SAVEM, KEPEM and the NEAP monitoring activities being implemented within the government at the same time. These recommendations were formally approved in February 1994. Knausenberger (1994) also stated that specific resources might have to be made available to support the EMEMP and that reference should be made to the process in the CAP Project Description and Grant Agreement. However, "this did not happen and the mission did not have the resources to support an EMEMP" (Bingham, 1997a). The main factor playing against EMEMP implementation was a decrease in Mission personnel, coinciding with a change in Mission status to that of a "watch Mission." Thus the EMEMP process became stalled and was not adequately revisited until the road rehabilitation PEA was carried out in 1995.

Programmatic Environmental Assessment–1996

The PEA for rural road rehabilitation activities (Loken, Bingham, Enders, Gupta, Hanchett & Herlehy, 1996) covered both CAP's farm-to-market access roads and SAVEM's road rehabilitation scheme. The latter was aimed specifically at taking pressure off protected areas.

The PEA recommended for each road rehabilitation segment:

- a "strategic evaluation and selection of transport options." Thus each segment was to be made the object of a standard Environmental Screening Form (ESF),
- a review and analysis of environmental issues, and
- the design and implementation of appropriate mitigation measures and monitoring procedures, including an EMEMP for longer term indirect and induced impacts.

The original intention was that the ESF would set out the mitigation measures and monitoring activities to be programmed in response to direct and construction-related impacts of the road segments. The EMEMP, on the other hand, was intended to address the associated and derived impacts resulting from CAP project activities, as well as those of other ongoing and planned agricultural promotion activities under SO2, including the Madagascar Agriculture Export Liberalization Support Project. By these two means it was anticipated that the Mission's agriculture and natural resources portfolios would come to cooperate far more closely on such pressing issues as agricultural extensification, deforestation, impacts on sensitive areas, and so forth. These requirements caused considerable Mission concern, especially about how the EMEMP could be accomplished given the reduction in Mission personnel (Bingham, 1997b).

While the ESFs were put in place for each road segment, as well as for several CAP agricultural processing activities, no totally satisfactory solution was found for the broader concerns to be addressed by the EMEMP process. However, it is worthy of note that, since 1996, completed screening forms have been presented to the Mission Environment Officer for approval, accompanied

by environmental impact assessments, proposed monitoring systems and mitigation plans. Although these three activities are components of a typical EMEMP, the Environmental Screening Forms are completed prior to project implementation, while the actual monitoring, evaluation, and mitigation components of the EMEMP are implemented during the project. Thus although there is a strong relationship between the ESF and EMEMP, they cannot be considered as the same event. However, one feature of CAP's activities fits well with the general EMEMP description in the first section of this report—the monitoring and mitigation of erosion following the building of road segments. The very considerable environmental monitoring carried out by ANGAP and ONE across large areas of Madagascar supports this idea. Unfortunately the monitoring/mitigation activities of CAP related to road segments and those of ONE and ANGAP concerning environmental monitoring have never been adequately brought together.

CAP EMEMP methodology

Notwithstanding the lack of a broader EMEMP addressing indirect and induced impacts as initially conceived, CAP and USAID/Madagascar did succeed well in introducing a series of procedures to be followed that sought:

- to reduce likely environmental damage resulting from its planned activities;
- to monitor the environmental situation for a period after completion of work; and
- to proactively carry out mitigation work before negative impacts occur and put in place a system to respond rapidly to unforeseen impacts.

The process was developed particularly for the road rehabilitation activities but was also used for CAP's interventions in agricultural processing businesses. Implementation involved not only CAP personnel but also government agencies such as ANGAP (assisted by SAVEM) and the Ministry of Water and Forestry, as well as the road-building entrepreneurs and the local population. The process has not only sought to avoid longer-term environmental harm but also to develop a thorough consultative process with Malagache counterparts as well as accomplishing a considered element of capacity building in environmental awareness and mitigation.

The road rehabilitation process has several steps. Before road segments are rehabilitated, CAP undertakes an environmental impact assessment in partnership with the competent local authorities, notably ANGAP and the Ministry of Water and Forestry. Using ANGAP's GIS capability, the route is traced and buffer zones are added on either side of the trace. Attention is given to ensure that the road will affect no areas of biological or cultural importance. The advice of local populations is particularly sought with regard to the location of religious and cultural sites. Should any potential negative impacts on such sites be identified, the road is rerouted to a less sensitive area.

During the planning process, recommendations are made to the road construction entrepreneur as to means to avoid negative environmental impacts. These include the stabilization of road edges, culverts and material extraction sites either by mechanical means (such as the use of

building materials) or biological (particularly the use of *Vetiveria zizanoides* or vetiver grass), the reduction in localized nuisance such as excessive dust (by regular spraying) and anti-erosion work.

Once built, the rehabilitated sections are closely monitored for a period of three months after construction and at regular intervals thereafter to ensure that no negative impacts, such as erosion, are occurring. The project intervenes, as necessary, when unanticipated negative impacts are discerned (i.e. operating as a mini-EMEMP).

Efforts have also been made to mitigate negative impacts from CAP involvement in agro-industries. It is interesting to note that this initiative was put in place by the project itself with no prompting from USAID. Examples of mitigation processes instigated by CAP include the following:

- During assistance for the development of rice dehulling plants it was found that enormous quantities of rice hulls were produced for which there was little local use. Initially the hulls were simply discarded creating an environmental hazard. CAP developed innovative systems to use the hulls by, for example, transforming them into charcoal briquettes as an alternative source of energy to wood charcoal, or using them to stabilize the surface of a football field.
- During assistance to a palm oil extraction plant it was found that the plant was producing large quantities of polluted water that was being released directly into rice paddies. Furthermore, a large quantity of palm-nut residue was produced that was proving difficult to dispose of. To prevent wastewater going straight into the paddies, CAP built retaining barriers and used vetiver grass to help in water purification while palm nut residue was composted.

The ESF and EMEMP implementation, as well as other environmental work in Madagascar, has been and continues to be supported and complemented by AID's assistance to other environmental monitoring activities in Madagascar. The role of SAVEM in developing GIS and environmental monitoring capacities at ANGAP has already been mentioned. Capacity has been developed both at the central level and at regional level and is now considered to be extremely well established (Dufils, pers. comm.). As evidence of this, it is interesting to note that the LDI project has recently recruited two former ANGAP agents as regional GIS/M&E officers. Although each region has considerable technical autonomy, the ANGAP central office has coordinated and maintained technical and product harmonization and compatibility. In this manner it has been able to build national data bases covering all of Madagascar from both historical data (SAVEM financed the digitization of historic map series) and from its ongoing environmental monitoring activities. In some cases data series are now in place that go back more than 40 years. Particularly relevant databases contain such information as the distribution and number of bushfires, the characteristics of watersheds, administrative boundaries, roads, vegetation types, and distribution and characteristics of protected areas. Thus ANGAP, with support from SAVEM, has ensured that the ecosystems of Madagascar are well known and documented; a fact that is providing considerable support and giving much base material to the new activities of LDI and MIRAY.

These data have enabled ANGAP and SAVEM to monitor very accurately whether or not different activities in regions have improved historic trends in such areas as the incidence of bushfires, forest clearance and tavy, or if negative impacts are occurring and at what rate. By using GIS techniques to integrate environmental data with other data sets such as population density and health policy, considerable progress has been made in Madagascar's planning processes and in showing clearly the need to integrate environmental protection activities with those of development. In itself, SAVEM taught the mission several lessons to which it responded during the design and implementation of LDI and MIRAY, particularly the need to integrate conservation with development. As a result of recent activity, ONE was able to develop programs to strengthen regional planning and rural land security management, which are providing valuable support to MIRAY and LDI activities.

Another aspect that merits mention is the assistance that USAID has provided to ONE, initially via the KEPEM project, and particularly to the development of the Environmental Plans (now in second 5-year phase). Although plan development has been coordinated by ONE and the Multi-Donor Secretariat, USAID has played a lead role in the process, in developing both the program and the monitoring and evaluation system. USAID insists that M&E data from its project field activity should be capable, wherever possible, of feeding relevant information into the Environmental Plan II M&E system. LDI has recently designed its M&E system in such a way that EP II and USAID's requirements are satisfied as far as possible (Marks & Ramaromanana, 1999). Within the next two or three months MIRAY will be formalizing their own M&E system, very much along the same lines as LDI. The complementarity of the two projects' M&E systems will allow monitoring of the projects' environmental impact at two scales. That of LDI will be concentrated primarily at the local and community level and allow information to be expressed at the sub-regional level (termed "Strategic Intervention Zones" by the project). That of MIRAY will concentrate on the regional (or "Landscape") level with data aggregation allowing information to be presented at the national scale.

2.3 Discussion

The Madagascar Mission has not developed the type of EMEMP called for in both the IEE or in chapter 7 of the PEA. However, following the publication of the two documents it has generally been agreed within USAID that CAP has proceeded very much in the right direction, especially with regard to agricultural processing, and that national environmental monitoring capacity has gone forward in an excellent manner. Thus, although the primary objective for which an EMEMP was required in Madagascar – to monitor and mitigate against the overarching and broader impacts of Mission activities in areas such as agricultural extensification and deforestation—has never been specifically accomplished, good progress has been made in related areas.

Thus after a very hesitant start to the development of an EMEMP process during the early stages of the CAP Project, USAID and CAP personnel have put in place a good monitoring and mitigation system. Although this certainly does not meet all the broad requirements of the initial IEE

and PEA, it has served both to monitor and mitigate the negative impacts of CAP's road rehabilitation scheme as well as its business development activities.

It would be valuable to look more closely at the main reasons why the USAID/Madagascar system ultimately worked well. Firstly, the system that has been put in place is simple, since it was designed to deal with individual sub-projects; i.e. the rehabilitation of distinct road segments and assistance to agribusinesses. This made the introduction and carrying out of monitoring and mitigation activities a relatively easy task. Secondly, the government, with considerable assistance from the Mission and other donors, has been able to achieve a high level of coordination and cooperation among all players active in environmental conservation and development. This has resulted in government structures, such as ANGAP and ONE, being accorded significant levels of autonomy. Thirdly, USAID/Madagascar has continually insisted that its development activities be sustainable. AID's efforts have therefore enabled structures like ANGAP and ONE to continue normal technical and administrative functions after mission support has ended. Finally, USAID/Madagascar is committed to being a "green" Mission. Consequently, it insists on linking development activities to environmental protection and strives to maintain an environmentally sound approach to development. Thus EMEMP-like processes have a logical and valuable place in the Mission's day to day activities as witnessed for example by all LDI fast-track activities being obliged to complete environmental screening forms and be ready to carry out mitigation activities if required.

2.4 Where to go from here?

The EMEMP process was not specifically mentioned in the new SO3 and RP1 and RP2 documents, certainly because no mitigation requirements were envisaged. Indeed its new projects—MIRAY, LDI and the soon-to-be-implemented ecological monitoring activities—have all received negative determinations with only mild reserve by the Mission Environment Officer. However, despite the negative determination, the Madagascar Mission has decided to ask for environmental screening forms for many LDI activities, as mentioned above. Information for the screening forms is being collected on a routine basis by the project itself since it recognizes the potential negative consequences of certain of its interventions.

Further, LDI has written into its Monitoring and Evaluation Plan the monitoring of key environmental indicators that are intended to identify negative impacts if and when they arise and thus allow mitigating activities to be undertaken rapidly. For example, a major component of the LDI project is to prevent the expansion of agricultural activities into priority ecosystems (sub-result package 3.2.1) by the introduction of a set of activities that seek to increase agricultural intensification. It is anticipated that increased crop production per unit land area together with crop diversification and better access to markets will increase the income of rural households while reducing the need to move into priority ecosystems and carry out tavy. However, the project is very much aware that this assumption may prove false and that in fact farmers with increased disposable income could recruit laborers to cut down even more forest. Thus not only will its M&E system measure indicators relative to production levels, crop diversification, and income levels but it will also measure the incidence of tavy around the zones of project intervention.

The Mission's decision to build this monitoring into the LDI project raises the question of why this idea has apparently been assimilated in Madagascar while it has not been in the other countries visited. Given that in the early years of the CAP project, Mission staff were not particularly aware of the EMEMP, we unfortunately really cannot conclude that the EMEMP concept and process have been effectively institutionalized, and thus claim a success for the EMEMP approach. Rather, a couple of other factors may contribute to this success. One is the fact that, as has been mentioned, the Madagascar Mission takes pride in its commitment to biodiversity and environmental sustainability, so staff consider this a priority and will not need reminding to integrate it into all project design. Thus environmental awareness in Madagascar has become second nature. As mentioned by Helen Gunther, it is certainly far easier to build environmental ethics into a program during the design phase and then to carry out monitoring during implementation than to try to change techniques and attitudes when the program is already underway. A second contributing factor may be that one of the authors of this report was also involved in design of the LDI M&E system. However, recruiting EMEMP experts to design all M&E systems is, unfortunately, not a practical way to ensure that environmental considerations become part of project monitoring. On the other hand, this may suggest that the routine inclusion of environmental specialists as an integral part of the teams designing M&E systems could help ensure that determination of environmental impact becomes a regular element of project monitoring activities.

3. Malawi

3.1 Mission and EMEMP Overview

The Malawi EMEMP was required under the Agricultural Sector Assistance Program (ASAP), an agricultural policy reform program that provided \$15 million in project support and \$20 million in budgetary support to the Government of Malawi. One of ASAP's key policy reforms was to liberalize the growing of burley tobacco, opening this lucrative market to smallholder farms which had previously been excluded. The ASAP project component was to provide technical support to smallholders to help them take advantage of the new opportunity in the tobacco market. Since burley production is substantially more profitable than other crops, this was expected to lead to a major shift into tobacco cultivation by small farmers.

Burley production poses two major environmental threats: expansion onto marginal lands with consequent deforestation and soil erosion, and extensive use of wood either to dry the tobacco or build drying sheds. The EMEMP—termed “Malawi Environmental Monitoring Project” or MEMP—was designed to determine whether these impacts in fact occurred, and if so to mitigate them.

The Malawi Mission has changed significantly since the ASAP EMEMP was first conceived. In 1995, with the changes in AID procedures, the Mission restructured its project activities into the new Strategic Objective (SO) structure. SO1 relates to increased agricultural production, while SO2 focuses on natural resource management. The activities of the ASAP project were split across the two SOs. A single new project, called NATURE, encompassed all of the SO2 activities including those formerly under ASAP. NATURE had a much broader policy reform agenda than ASAP had, working on changes in many of the country's environment and natural resources laws. MEMP was moved into the NATURE project, linking it to environmental rather than to agricultural objectives. Whereas under ASAP MEMP had only focused on monitoring the impacts of burley cultivation, under NATURE it was expected also to provide broader support to the implementation of a national environmental information system (EIS), as called for by the Malawi NEAP. NATURE is a \$40 million project, \$9.5 million for project activities and \$30.5 for budgetary support to the government. The entire project, including MEMP, was contracted through the University of Arizona, which subcontracted with Clark University's GIS laboratory for some components of the work.

The University of Arizona contract for the NATURE project will end at the end of April, 1999, after several extensions. Funding for the project runs through September, 2000, and the Mission is now engaged in determining how to use the remaining resources. The Mission is also about to begin its new CSP process, and is open to suggestions for how to handle environmental monitoring issues in that context. Our work in Malawi is therefore very timely both in terms of the short-term decisions about the remaining NATURE activities and in terms of long-term planning.

3.2 Implementation of the EMEMP

Catchment Work

Implementation of the MEMP occurred several overlapping phases. The first began in 1993, under the ASAP project, and has continued through the present under NATURE. This activity was designed to focus specifically on identifying and monitoring the impacts of burley cultivation on the environment. Although presented as a proposal of the Government of Malawi, the activity was designed with substantial input from the University of Arizona, Clark University, and the World Resources Institute. The result was a program which has monitored five small catchments to determine how the changed agricultural practices associated with burley cultivation affected soil erosion and downstream water quality. The program involved collecting runoff from sample plots in each catchment and measuring the sediment and chemicals it contained. The program also used satellite imagery and aerial photographs, and tried to use aerial videography, to identify land use change in the catchments.

MEMP implementation was the responsibility of the Department of Research and Environmental Affairs (DREA), which was then under the office of the president. (In 1994, DREA became the Environmental Affairs Department (EAD) within the new Ministry of Research and Environmental Affairs; in 1996 EAD was placed within the Ministry of Forestry, Fisheries, Research and Environmental Affairs). DREA (and then EAD) was responsible for coordinating the overall program and bringing together data and analyses from other sources in order to answer questions about the impacts of burley cultivation on the environment. They were assisted by a long-term technical advisor provided through the University of Arizona who joined the project in September 1993 (and is scheduled to leave at the end of April, 1999). Collection of the MEMP data was contracted out to six technical agencies, each of which was supplied with necessary computer equipment and training in GIS and other techniques.

Implementation of the catchment monitoring program has raised an array of problems. One question which arose from the start concerned the choice of catchment basins. It is not entirely clear who chose the particular basins studied or on what grounds. The prevailing assumption is that the government chose areas where burley cultivation was expected to take off in response to the new policies. (See Tobin 1996 for a thorough discussion of this issue.) However, for a variety of unrelated socioeconomic reasons, burley cultivation never occurred in any of the basins chosen. Consequently, even if everything else had gone flawlessly in the monitoring program, it would not have been possible to establish a causal link between burley and the quality of the environment. Moreover, the five catchments chosen are not representative of growing conditions across the country, so even if burley cultivation had been adopted, the results could not be generalized to the whole country.

A second problem with the catchment program concerned the technical and institutional capacity of the Malawian institutions to carry out the technical work or manage the program. The data collection suffered from a variety of problems rendering the results at times unusable (Tobin

1996). Some of the data collection was to be done by farmers on their own fields, but the training proved inadequate and the results were not used. In some basins, rainfall gauges were too far from the field plots to assess the relationship between rainfall intensity and runoff. In others, sample plots used different cropping techniques, so the results were not comparable (Burger and Mohamoud 1998). While the technical agency staff have generally been able to collect and report on their parts of the data, they have often been unable to analyze them, particularly in relation to the issues raised by the MEMP. EAD also had trouble coordinating the technical agencies so as to ensure that the data collected could be integrated meaningfully. These problems have limited the utility of the results, even aside from the issue of whether they provided any information about the impacts of burley cultivation.

The catchment work has also been questioned on broader grounds which go beyond the technical problems in its design and implementation. It is simply not clear that such a detailed research activity was the most cost-effective way to deal with the environmental issues raised by the tobacco market reforms. The MEMP catchment work has not provided decision-makers with any clear understanding of the environmental impacts of burley cultivation. It has also not led to any mitigation activities, being entirely focused on research and monitoring. This has led most of the people involved—EAD staff, NATURE project staff, and USAID staff—to question its utility.

The problems with the catchment monitoring were already clear when NATURE was designed in 1995. Consequently, that program added included several new activities intended to make up for the limitations of the catchment work. One was the recruitment of a policy advisor who worked with EAD to help introduce a variety of broad changes in environmental laws and regulations. The second was recruitment of a scientific advisor, placed in Bundu College, to develop a curriculum to build the skills found lacking in the technical agencies implementing the MEMP. The third was a mandate for the advisor already working with the MEMP to help EAD coordinate the development of a broader environmental information system as called for under the NEAP.

The two additional advisors did not fall directly within the purview of the MEMP, though their presence was in some measure a response to its flaws. The reforms with which the policy advisor has been associated have greatly expanded AID's involvement with policy changes, far beyond the specific burley tobacco issues which originally called for development of the MEMP. It has been considered totally unrealistic to expand MEMP monitoring activities to cover all of the specific policy changes now occurring, so it continued to focus only on burley.

NATURE was part of SO2 (the environment objective) rather than SO1 (the agriculture objective), so the clear connection between agricultural development and its implications for the environment was in some measure severed. This may have had implications for the commitment to MEMP within the USAID Mission, as the monitoring became divorced from the policy changes whose impacts it was to identify.

Environmental Information System

The requirement that NATURE assist in the development of an EIS led to the second phase of MEMP implementation. Under Malawi's Environmental Management Act, EAD is to take the lead in EIS development, by building a network among the technical agencies which collect primary data, through which to ensure that data are shared and are compatible. The GIS training provided through MEMP, both prior to and after the start of NATURE, was one step in the development of the EIS, since GIS skills are necessary to manage and analyze environmental data.

Although the project component of MEMP supported GIS technical assistance through Clark University, it did not provide funds to the government to undertake other activities related to building an EIS. The assumption was that these funds would be provided by the government; since NATURE provided substantial NPA, sufficient resources were expected to be available for this purpose. This assumption overlooked the fact that the NPA funds were provided as general budget support to the Malawian treasury, which did not choose to allocate them to providing counterpart support for NATURE project. In response to the lack of government or USAID support, EAD and the MEMP advisor sought and received funding from the World Bank for their work on the EIS.

The resulting EIS work, responding to some of the criticisms leveled at the catchment activity, has involved development of a prototype information system designed specifically to answer a particular policy question of considerable concern to the administration. This is the issue of the build-up of sediment upstream from a dam on the middle portion of the Shire River in southern Malawi. The sediment is harming the power generation equipment of the dam, and thus threatening this major capital investment. The focus of the prototype system was to identify "erosion hot-spots" where mitigation actions might be the most useful in preventing further sedimentation of the dam. The prototype project involved several different technical agencies, including those responsible for forestry, land resources, and meteorology. The Water Department was not involved, notwithstanding the interest in dam siltation; the focus was on where erosion was occurring, not how much silt resulted. As under the catchment work, GIS training was provided to the technical agencies involved, including travel to Arizona for more advanced work for a few individuals.

While everyone agrees that sediment buildup in the Middle Shire is indeed a key problem, no one interviewed in the course of this assignment had seen any final results from the activity. It is not yet clear, therefore, whether the government is satisfied with the information it has obtained on the causes of dam siltation. It is also not possible to assess how useful the prototype has been in laying the groundwork for developing an EIS at the national scale. Some key aspects of the work, notably the development of agreed-upon standards for digitizing the country's base maps, are still underway; therefore the prototype could not rely on this fundamental building block in the construction of a national EIS.

There is considerable interest among MEMP staff and in the Mission in building a national EIS which would go beyond the pilot Middle Shire work. The major difficulty is in identifying an institutional home for such venture. EAD has the mandate to play this role, they have not shown the

capacity or leadership necessary to make it work. A proposal was developed to build EIS capability work in the Agricultural Policy Research Unit at Bundu College. This unit had the advantage of being outside the constraints of the government ministries, and offered the possibility of flexibly tapping into a range of expertise. However, this depended on the unit being given a degree of autonomy in its operations which the college was reluctant to grant. Another possible institutional home for a national EIS might be the Rural Economic Policy Center now being established under SO1. The center is to be a relatively autonomous center which will receive an initial grant of funds, but which is expected to evolve into a contract research organization providing services to ministries, donors, and projects for a fee. If it operates as hoped, this may be an interesting possibility; however it is premature to assess the feasibility of this scenario.

Other activities

The third “phase” of the EMEMP work is much narrower in scope than the first two, deliberately. In 1998, responding to the criticisms of the previous work, the project launched a rapid interview-based assessment of the social and environmental impacts of market liberalization of smallholder agriculture. Using the Middle Shire EIS data, the Clark University-led research team selected six villages where land degradation was known to be occurring. The researchers used satellite images and aerial photographs to determine how agricultural expansion is affecting land use, confirming this with ground truthing. They then conducted household interviews and focus groups to determine why this expansion was occurring. Based on preliminary reports, it looks like this study will provide interesting insights into some of the specific impacts of burley tobacco reforms. The use of case studies and interviews rather than statistical techniques and quantitative data gives richer insights into the causes of the impacts observed and the mechanisms through which they occur. At the same time, it means that the sample villages are not representative of the country as a whole and the data cannot as easily be applied to the analysis of other environmental issues.

Two other activities are not part of the EMEMP, but are in some measure related. One is a prototype test of the areal sampling frame (ASF) approach to collecting agricultural statistics, carried out in eight agricultural development divisions. The ASF approach has been proposed to replace the current population-based agricultural enumeration districts. Because it is inherently spatial, it would rely on the GIS capability which has been developed through ASAP and NATURE. It would allow easy coordination between the collection of agricultural data and the collection of other data useful for natural resource management. The use of single standardized sampling frame would also make data-sharing easy. For these reasons, the use of ASF is of considerable interest if the government or USAID is interested in building an effective environmental information system. Moreover, the ASF approach should be less expensive than population-based enumeration, and it is statistically more reliable.

The prototype ASF work did not go well, however. The training of the enumerators was apparently inadequate, and in some areas there were conflicts in the data they collected. In addition, some of the segments turned out to be too large to identify all land uses. The errors in turn weakened government support for the approach, and there is disagreement about it within the Ministry of

Agriculture. The World Bank and the FAO are still interested in the possibility of introducing this approach; however at this point there is no financial support for it.

The other related activity is the preparation of a public land survey, which looked at all land owned by the government and considered its potential for agriculture and other productive uses. This study was GIS-based, and the financing was run through the NATURE project. Not surprisingly, it has been linked with the MEMP, although in fact they were not connected. All of the digitizing for the public land survey was done in Arizona, where technicians from the Departments of Surveys and of Land Resources and Conservation went for training. Unfortunately, this created the incorrect impression – including among some USAID personnel – that all of the digitizing work under the MEMP was done in Arizona rather than in Malawi. This activity was not closely linked to the work under the MEMP, and did not explicitly serve as further pilot project work for the EIS.

3.3 Discussion

Funding for EIS Work

The implementation of the MEMP raises a number of questions which may be of some bearing to other countries as well. One set of issues stems from the MEMP/EIS funding situation. The project design assumed that the government would provide funds to implement aspects of the catchment and EIS work. However, those funds were never made available, notwithstanding the budgetary support provided through the NPA portion of NATURE. This raises the larger question of whether NPA budgetary support is meant to be unrestricted, or whether USAID can target it to specific purposes which might not otherwise be government priorities. If the latter, it would appear that AID is moving away from the initial concept of NPA, and back towards simple project assistance. This may make it easier to undertake activities such as EIS development. However, insofar as NPA budget support was implicitly a payment in return for policy reforms, it may become more difficult to encourage governments to make reforms which AID considers essential.

Funding issues also arose around the EIS work. The lack of USAID funding for government work anticipated in the project design can be interpreted in several ways. From the perspective of NATURE staff, it looked something like an “unfunded mandate.” The project was directed to help the government work in the EIS area, but did not have the resources with which to do so. From their perspective, the need to seek funds from the World Bank may have reduced AID influence, and been indicative of a lack of commitment on AID’s part. Moreover, the need to piece together support from a variety of sources may have diverted staff time from technical work to fund-raising, and probably made it more difficult to retain the intended focus of the activities planned for the project.

On the other hand, this could look to AID like an excellent example of using limited support – the salary of the NATURE MEMP advisor and Clark University technical assistance– to leverage additional resources from other donors. The need to obtain buy-in from other donors may be thought to ensure that the resulting activities have broader support than would an activity fully funded by a single donor. The need to respond to the priorities of several different groups may be understood to

strengthen the resulting activities, rather than giving them a lack of focus. Moreover, the fact that USAID had already contributed to the activity might make it easier to obtain support from other donors than it would be were the other donors the only ones expected to pay for it.

Working with the Malawi Government

A second issue highlighted by the MEMP experience concerns the financial incentives faced by government employees and their willingness to undertake donor-funded activities. While this issue arises in most African countries, it seems to be particularly pronounced in Malawi. To be blunt, Malawian civil servants are paid very badly. Consequently, they seek to increase their earnings by participating in donor-funded workshops or training courses for which they receive per diems or honoraria which can double or triple their salaries. Projects which offer such opportunities will hold the interest of civil servants for as long as the possibility of additional workshops – and additional income – remains. Once the training phase is completed and civil servants are expected to stay on the job to apply what they have learned, they move on to find the next donor project which offers opportunities to increase their earnings. Consequently, it is very hard to find civil servants willing to make an ongoing commitment to activities such as environmental monitoring, which will not increase their earnings after the first year or so.

The experience of the Famine Early Warning System (FEWS) project is the exception which proves this rule. The FEWS staff are former civil servants who have become project employees, paid with USAID funds. They do not attend workshops or have other opportunities to increase their earnings through per diems and honoraria. However, they are paid significantly more than they received as civil servants. While we didn't ask how much the difference was, it was clearly enough that they were willing to stay on their jobs, working fairly independently to produce routine, reliable information products on an ongoing basis. Both the Malawi FEWS reps and USAID project staff were up-front about the difference in salary being the factor which induced the FEWS reps to make a long-term commitment to the project.

The rationality of the income-seeking behavior of Malawian civil servants suggests that it should be seriously factored into the design of future EIS activities (as well as other projects). It may simply not be reasonable to expect any project to be institutionalized into the Malawian civil service unless the broader context leading to the “workshop syndrome” is addressed. Rather, it may make more sense to design projects which can benefit the country even if they are not taken over by the civil service after a few years.

This is related to another question which probably comes up in other countries as well. There is much discussion about the need for EIS work to be demand-driven, and many assertions that if this is not a government priority it will never work. However, by and large environmental information systems are not a government priority, and they probably will not be for a long time. EIS, like other statistical work such as a census of population or national income accounting, is a long-run activity, with payoffs relatively far into the future and quite hard to demonstrate. Countries with very low income, like poor individuals, cannot afford to take a long-run perspective on the return to their investments. However, this does not mean such investments are not worthwhile.

Donor countries, which have their own demand for statistical data, can afford to take a longer term perspective in deciding how to allocate resources. It may, therefore, be efficient for them to put funds into environmental monitoring even if the government would not set this as its highest priority.

The combination of time horizon and the “workshop syndrome” suggests that, in the case of statistical data development, AID may want to take a different approach from the one which characterizes most of its work. Typically, the expectation is that a donor-funded project will provide support for a few years to begin activities which the government will then take over with its own funds. Presumably the expectation is that the donor will provide, in essence, the investment capital and the host country government will provide operating costs.

The Malawi example suggests that this does not work in the case of information systems. While donor agencies are welcome to initiate activities, the Malawi government has not been willing to provide the operating costs, whether the activity in question is a detailed research project, like the catchment work, or a system to address a question of broad policy interest, like the Middle Shire work.

An alternate model, suggested by FEWS, may therefore be useful. In the FEWS project, AID has covered both investment and operating costs over a significant period of time. The payoff has come, not because the government has taken responsibility for funding FEWS itself, but because FEWS produces a reliable, consistent set of products which are of use far beyond the famine early warning arena which has justified the expenditure. FEWS data are used throughout Africa at the national and regional (multi-country) scale. In FEWS, as in all data development projects, the whole is greater than the sum of its parts. Because these data are available consistently over a long period of time, and in this case across many countries, their value goes far beyond data for a single year or a single country. In its field, FEWS plays the role which an EIS would play for the data needed for environmental management; it pulls them together, cleans them up, standardizes them, and makes them available on request to whoever is interested.

The same general approach may be the only way in which AID can effectively support the development of environmental information systems. By focusing on a few core types of data and providing ongoing long-term support to ensure that they are reliably collected and disseminated, AID would create a system on which other donors can build, and from which everyone will reap benefits – much as they have done with the FEWS project. At present most of the demand for EIS data comes from the donors, who wish to use them to develop their own priorities and projects, and who may hope to encourage the governments to use them in similar ways. If donor activities do, in fact, benefit the countries, then long-term investments in better EIS data will pay off for the country even if the government is not willing to make them. On this basis, it may make sense for AID to commit to long-term support for environmental information system, assuming that the payoffs will come through use of the data and better development activities in the future, rather than through short-term government willingness to take responsibility for the systems themselves.

Scope of Environmental Monitoring

The Malawi experience suggests several models for the scope of NPA environmental monitoring. The first MEMP approach was the fairly narrow, focused catchment monitoring. It was unsuccessful for two reasons; first because no burley was cultivated in the catchments chosen, and second because of the difficulty of coordinating six agencies to collect and analyze data. The second problem may be the more valid objection to the approach. In five years of work it has been difficult to draw *any* conclusions, irrespective of whether they shed light on burley cultivation. Even had the catchments been better chosen, this approach may require too much effort for too little results.

The second approach was the EIS pilot work on the Middle Shire. Although results were not available, this seemed to be a well-designed study of a particular issue of interest to the government (although not to AID). The important question is whether this work will contribute to building a broader EIS in Malawi. The Middle Shire work trained some GIS experts and will probably contribute to interest in seeing more spatial analysis of policy issues, but it remains to be seen whether it will be possible to develop the institutional capacity to manage a national EIS. The lack of government capacity to build an EIS suggests that this pilot activity may not contribute significantly to this objective.

The third approach was the village-level case studies initiated in 1998, which aim to provide a rapid and low-cost answer to specific questions of concern to USAID. This study has not been linked to broader capacity-building in the government or to the development of national data on similar issues. This cannot easily be linked to other indicators or environmental monitoring work without making it much more complex and expensive. However, separating the need to answer specific questions for AID purposes from the interest in building EIS in the government may prove to be an efficient strategy.

3.4 Where to go from here

The Malawi Mission is facing two issues related to the future of its environmental monitoring work. The NATURE contract with the University of Arizona is ending, and the long-term staff will leave by spring 1999. However the project runs for another year and a half, until fall 2000. The first issue, therefore, is how to use the remaining funds. The Mission is also beginning to consider its next Country Strategy Plan (CSP), which will go into effect in 2000. The second issue is how to build environmental monitoring and mitigation into the new plan.

In making plans for the next two years, the Mission has put together a draft amendment to the NATURE PAAD and project paper. The proposal for use of the remaining MEMP funds – at least as of the time of this TDY—is that they be given out in small grants in response to unsolicited proposals from government agencies wishing to undertake further work with GIS or environmental research. This seems to be something of a “second best” strategy, from the perspective of Mission staff as well as the EMEMP assessment team. Ideally, such funds could be used to provide incremental assistance to an institution which was working towards development of a national EIS.

No such institution exists, however, and neither the funding nor the time remaining is sufficient to begin building one. The difficulties faced by the Malawian civil service, particularly the “workshop syndrome,” raise fears that grants out of these funds, especially grants for additional training, will serve more to increase the short-term revenues of the participants than to build any long-term capacity or information systems. This seems to be unavoidable, however. The best we can do may be simply to hope that grants will go for specific analytical projects which will generate increased support for such work, even if it does not create data systems which outlive the duration of the funds.

The development of the Mission’s new CSP provides an opportunity to think much more broadly about the EMEMP and EIS experiences of Malawi and other countries, in deciding what options to consider for the future. The final chapter of this report sets out a number of different strategies which the Mission could consider. The Mission may want to give particular consideration to using its next program to provide long-term support for a national EIS and strengthened collection and use of base data. This could be a joint element of the (current) agriculture and NRM strategic objectives. Alternately, it could be included within the democratization SO, and be linked to all of the mission’s other activities. The development of publicly accessible long-term data is a valuable tool to understand the development of the country, the evolution of the environment, and how the well-being of the population is changing; thus it is a building block of a democratic system. Including this in the democratization SO would easily be justifiable.

4. Uganda

4.1 Mission and EMEMP Overview

The Uganda EMEMP was designed to monitor the environmental impacts of two agriculture-based projects, the Agriculture Nontraditional Export Promotion project (ANEP) and the Investment in Developing Export Agriculture project (IDEA). ANEP began in 1988 and passed into phase II during 1994. Its primary focus was on policy reform to liberalize the economy in general and the agricultural sector in particular. During its first phase, ANEP created an Export Policy Analysis and Development Unit within the Ministry of Finance and Economic Planning. Support for this unit ended in the second phase of ANEP.

IDEA, a \$25 million, 5-year project, was designed during 1993/1994 and began activities in 1995. IDEA seeks both to increase the output and of non-traditional high-value agricultural exports such as cut flowers (particularly roses), essential oils, oil crops, and spices, and to intensify production and increase marketing of traditionally-cultivated low-value field crops such as maize and beans. The project aims to overcome production and marketing constraints by providing technical assistance, training and small grants to producers, processors, exporters, and by funding research in crop production and processing within the National Agricultural Research Organization. Most IDEA activities have been managed through the project's Agribusiness Development Center. IDEA's cooperation with government is predominantly through the Ministry of Tourism, Trade and Industry, although it also cooperates significantly with the Ministry of Agriculture, particularly at the district level. IDEA will soon undergo an end of project evaluation and a second phase is expected. This evaluation provides a window of opportunity to revisit and logically strengthen the EMEMP activities.

The IDEA project activities were expected to affect the environment in several ways. The project has two components, the cultivation of high-value products for export to Europe, and increased output of traditional commodities for export within the region. The high-value products involve the use of agrochemicals, which can cause pollution and environmental health risks. Increasing the output of conventional crops, on the other hand, is not likely to involve significant chemical inputs. While the objective of the project is to intensify their cultivation, effort to increase output in order to export to new markets could also lead to conversion of marginal lands to agriculture, with implications for soil erosion, sedimentation, forest degradation, and other problems in the management of natural resources.

It was originally anticipated that the ANEP/IDEA EMEMP would be supported by the Mission's environmental activities, particularly by the Action Program for the Environment (APE). This program began in 1991 and will end in September 1999. The Mission is planning a follow-up to APE, the Program to Conserve Biodiversity for Sustainable Development (COBS), which will run through 2002 and will build on APE successes. Both are part of the Mission's SO2.

When the new strategic objectives system was introduced at AID, ANEP and IDEA became major components of SO1 – “Increased Rural Household Income/Rural Household Expenditures.” APE was placed within SO2, “Critical Ecosystems Conserved to Sustain Biological Diversity and to Enhance Benefits to Society,” which included the Mission’s work on protected areas, buffer zones, and natural resource management. The two strategic objectives have been managed quite separately; in particular, there has not been an effort to use SO2 activities to help address possible natural resources impacts of SO1 projects.

APE is a natural resources and biodiversity support program designed to assist the public and private sectors to manage the resource base effectively and sustainably. The program supported or continues to support several environmental components:

- assistance for the development and implementation of the NEAP, including support for the creation of the National Environmental Information Centre (NEIC), which is part of the National Environmental Management Authority (NEMA);
- establishing and support a Grants Management Unit (GMU), which manages grants to NGOs implementing conservation projects. The GMU is being converted to an endowment trust, which will receive considerable support from USAID;
- capacity building at the Uganda Wildlife Authority (previously the National Parks) to improve management of protected areas; and
- water hyacinth control.

4.2 EMEMP Implementation

The EMEMP process in Uganda has undergone a complex evolution. Initially, it was called for following the preparation of an IEE for the last amendment of ANEP I (Hecht, 1994). It was to be the means of tracking the impacts of the two phases of ANEP and of IDEA. The IEE of September 1992 recommended three actions:

- an EIA for ANEP activities to develop an understanding of how policy reforms have affected the environment and to provide the basis of the EMEMP–this was not completed;
- completion of individual environment impact reviews for sectors of focus for ANEP;
- continuing environmental assessments of activities funded through the project.

An ANEP/IDEA EMEMP document was prepared in June 1993 (ANEP, 1993). It recommended that Environmental Impact Reviews (EIR) be prepared for the five target activities of IDEA and this was carried out in 1994 (Morton, Sergeant and Smedley, 1994). The reviews described anticipated impacts and recommended both preventive actions and monitoring indicators at local and national levels. The EMEMP then called for establishment of a system to track the environmental impacts of IDEA’s activities and for collection of secondary data from such sources as APE and the NEIC. Finally, the EMEMP called for environmental assessments of activities funded under IDEA, which would provide information with which to design strategies to prevent or

mitigate environmental harm due to project activities. Researchers from the Makerere University were expected to conduct the assessments.

Overall responsibility for the EMEMP resided in the Mission, design of the system was prepared by Regional Environmental Officer, and the IDEA contractors were charged with implementing the system. Information for the EMEMP was to come from a variety of sources. IDEA project staff were to collect agricultural data, while APE and NEIC, as indicated above, were to collect environmental data. It was anticipated that businesses supported by the IDEA project would concentrate on preventing harm rather than on monitoring and mitigation activities. As Hecht (1994) discusses, the institutional arrangements for impact monitoring and mitigation were not clearly thought through and were only partially implemented.

The environmental monitoring required by the EMEMP falls within the responsibility of the IDEA staff. It has been incorporated into commodity studies for which the project contracted with local consulting companies. Two of those studies were available to the EMEMP team, one prepared by Ssemwanga Centre for Agriculture and Food Ltd. on rose production and one prepared by Vinlaw Associates on increased cultivation of maize and beans for export.² The environmental components of those studies focused primarily on screening and monitoring, rather than on mitigation. They had two components.

First, for all of the rose producers and the major growers of low-value products, the project completes a screening form designed to flag possible environmental problems before project activities begin. This is sketchy, at best, only asking a few questions about whether any environmental problems might be anticipated and whether steps have been taken to address them.

The second component involves the preparation of monitoring reports on the two components of the project, based on detailed surveys of the firms involved in producing agricultural products for export. These surveys address a wide range of issues, of which the environment is only one – which could mean either that environment is not receiving sufficient attention, or that it has finally been mainstreamed into routine M&E activities. Unfortunately, the attention to environmental issues in the assessment reports is weak, and at a number of points the reports do not seem consistent with facts provided in the surveys. Mainstreaming the environment into a broader survey is a good strategy, but somewhat more detail on this topic might have been helpful.

Monitoring of Rose-Growing Activities

The monitoring of rose production has focused principally on growers in the Entebbe area, near the international airport. A 1997 study (Ssemwanga Centre, 1997) looked at three farms, Ziwa Horticultural Exporters, Nile Roses and Nsimbe Estates. The environmental portion of the monitoring survey asked farm managers about the actual or potential impacts of their activities and

² Several other firms apparently studied vanilla and fresh produce; however the team had no information about their work, nor did we see their reports. This discussion is therefore based on the two reports to which we were offered access.

any mitigation processes that were undertaken. None of the three companies perceived any major negative environmental impacts.

This survey poses several problems. First, the managers of the three rose farms are hardly credible sources of information about their impacts on the environment, since they have a strong incentive to minimize any possible harm they might be causing. Second, their statements run counter to some of the specific practices mentioned in the surveys, such as burying polythene bags and other chemical packaging materials in trenches. Third, the consultants asserted that they did not see “any *signs* of environmental degradation that could be attributed to the activities of the rose farms” (emphasis added). However they did not undertake any systematic actions to look for such impacts, so the fact that they did not see any signs of them may not be meaningful. Given the multitude of water channels in the area and the proximity to Lake Victoria, downstream monitoring of water quality would appear to be an appropriate way to look for environmental impacts. However, no such activities are currently within the scope of the IDEA monitoring.

The report concluded that rose farming poses no harm to the environment. However, this is not consistent with other statements within the same document, such as:

The rose industry uses a lot of chemicals to control diseases and pests and to supply balanced nourishment to the plants. The chemicals have the potential to pollute the environment through surface run-off that could end up in waterways or through vaporization and escape to the atmosphere.

No effort is made to determine whether that potential is realized or show that it is not, and the only information obtained on farming practices comes from the farmers themselves. Consequently, the report conveys an impression that the authors were willing to dismiss environmental concerns without having made a serious attempt to investigate them.

During the EMEMP review team’s mission to Kampala in February 1999, another USAID team was undertaking a broad review of all pesticide issues which could arise under SO-1 activities. This had been anticipated by the Mission and by AID/W as an activity within which to identify and if necessary resolve pesticide problems associated with the rose-growing activities. However, members of the pesticide review team explained that they were focusing only on practices for pesticide use. While they would consider whether practices should prevent downstream impacts, they could not look at downstream water quality to determine whether they actually did so. Their results will be valuable to both the project and the Mission, but they will not shed light on the actual environmental impacts of rose cultivation, nor will they lead to strategies for detecting degradation of downstream water quality if it is occurring.

That NTAE activities could have detrimental impacts on downstream ecosystems has been suggested by a number of individuals and organizations working in the environmental field. For IDEA to actually build a component of water quality monitoring to track such impacts would be difficult. The project could, however, look to other donors for contributions to this effort. The Danish International Development Agency (DANIDA) is currently funding the installation of pesticide testing capacity in the Directorate of Water Resources at Entebbe, and the World Bank is funding the Lake Victoria Environmental Management Project. The Mission or the project staff

should investigate collaboration with these projects in the development of a water quality monitoring systems which could identify such impacts.

The IDEA staff feel that tighter environmental monitoring is not needed, because an alternative external control is present on certain of the NTAEs with which they work. The European Union (EU), the major importer of flowers and foodstuffs from East Africa, has stringent quality requirements and undertakes frequent testing of food exports for pesticide and other chemical contents. Furthermore the EU insists that companies follow rigorous worker protection guidelines. With these controls in place the USAID Mission does not consider that more extensive monitoring by IDEA is necessary or indeed possible. However, as described by the IDEA staff EU controls only cover the quality of export goods and worker safety, not the possible local environmental externalities caused by USAID program/project activities which are the *raison d'être* of the EMEMP process.

Monitoring Maize and Bean Cultivation

The most widespread activity supported by the IDEA project is the growth of maize and beans for export within East Africa. These crops use very low levels of inputs and there is little demand from peasant farmers for pesticides and other agrochemicals. Thus, quite rationally there is not expected to be significant pollution from these sources, and the project (Vinlaw Associates, 1998) concludes that there is no evidence of pesticide or fertilizer run-off.

The consulting firm did however, suggest that two potential areas of environmental hazard should be monitored closely: deforestation due to the expansion of maize acreage and soil degradation because of the lack of viable crop rotation. The evidence on these problems is somewhat conflicting.

On the one hand, many actors in the environmental field pointed out that pressures on sensitive ecosystems are light, since considerable potential farmland is still available and farmers are currently recultivating lands abandoned under the Idi Amin regime. In addition, the IDEA project runs activities to train farmers in the use of soil conservation measures, such as bunds, grass hedges, contour planting, composting, use of improved seed varieties, in order to prevent erosion and soil degradation. It is said that farmers are now well sensitized in these issues and therefore environmental problems are not expected.

On the other hand, the district level reports on which the Vinlaw Associates study is based offer a different perspective. While the synthesis report asserts that deforestation and soil degradation are not posing serious problems, the summaries of the district surveys frequently refer to significant natural resource management concerns. For example, in several districts fully 60% of surveyed households stated that they experienced serious soil erosion problems.

The different views on these issues suggest that the IDEA natural resource management activities may not be having as much impact as hoped, or that they not always reaching the right audience. Of course those responding to the Vinlaw Associates surveys will not distinguish between

erosion caused by project activities and other erosion, so the project could be preventing harm from its own activities while other forces are still causing problems.

Links to other projects

There is currently little coordination between IDEA and other projects with regard to environmental protection or monitoring. IDEA staff feel that there should be a link between their work on intensifying traditional agriculture and SO2 activities in buffer areas. SO2 team members expressed support for this idea, in the context of their work to reduce pressure on protected areas by helping buffer zone populations find alternatives to charcoal production, poaching and extensive agriculture. However, the manner in which the two sets of activities could collaborate has not been worked out. This is an interesting challenge that the two parties should consider, including perhaps a link between improved environmental monitoring by SO2 and improved impact monitoring and mitigation activities by IDEA.

4.3 Discussion

The nature of IDEA's support to NTAE and traditional agriculture means that some environmental impacts are inevitable; the former more likely related to the use of agrochemicals and the latter to forest encroachment and soil degradation. This is well understood by both project and Mission personnel. Both project and Mission staff have judged these impacts to be relatively minor, and to be adequately addressed by instructing growers in the use of measures which could prevent harmful impacts. To give some teeth to those instructions, at least in the case of the NTAEs, they rely on the European Union import requirements, which force farmers to take certain precautions lest they lose their markets.

This approach means that the project may not always realize if its activities, especially in support of high-value exports, actually are producing negative environmental impacts. This is particular the case in areas where the EU requirements do not apply, notably the downstream environmental impacts of agrochemical use or the impacts of expanded traditional production. Relying on self-monitoring by the horticultural companies which are supported by IDEA is risky. While the majority of enterprises may be careful not to harm the environment, some companies will certainly be less diligent than others and negative impacts may well go unreported and unmitigated. Thus for IDEA to rely greatly on the EU and on NTAE-assisted companies means that negative environmental impacts could go overlooked and untreated. This goes against the principle of Reg. 16 and the original EMEMP requirements.

This problem suggests that either the IDEA project or the SO1 staff should develop a more comprehensive program to identify the environmental impacts of their activities. However, in considering this, we must bear in mind the attitudes and requirements of USAID/Kampala. SO1 staff do not wish to put additional resources into monitoring and mitigation activities, but consider the current situation satisfactory. They are being judged by their performance on their overall objectives, to increase rural incomes and expenditures through a very broad set of activities—of which IDEA is

only one. Resources devoted to monitoring or mitigating environmental impacts would further dilute a program whose staff and funds are already stretched very thin. In contrast, the SO2 team is far more concerned about environmental impacts and may be amenable to help develop such a monitoring process in conjunction with SO1. It would seem that concrete discussion between the two teams along these lines might be a valuable exercise.

4.4 Where to go from here

There is currently a window of opportunity to rectify the lack of adequate monitoring and mitigation processes in the IDEA project. The initial phase of IDEA is due to finish in less than a year and a review is soon to be undertaken for developing a second phase. One component of this review should be to strengthen the monitoring and mitigation activities of the project, possibly in conjunction with national partners. In particular, Phase II of IDEA should consider the adoption of a more serious strategy for monitoring the environmental impacts of its interventions in both low-value and high-value commodities. For low-value commodities, monitoring might focus on the extent to which cultivation may be expanding into sensitive ecosystems despite the project focus on intensification. It might also assess the effectiveness of soil conservation techniques and farmer sensitization in reducing soil erosion on steeper slopes. These issues are directly related to the concerns of SO2, so they may offer an opportunity for collaboration between the two strategic objectives.

Existing data on the environment may provide a good basis for beginning such monitoring work. Relevant information may be available from such institutions as the National Environmental Management Authority (NEMA), the National Agricultural Research Organization, the Makerere University Institute for the Environment and Natural Resources (MUIENR), the Ministry of Finance and Economic Planning and the Biomass Project (Department of Forestry). The Biomass Project, in particular, has developed an excellent spatial database on land use and land cover, which could provide both technical assistance and recent baseline data for selected districts where IDEA is most active. MUIENR has developed databases on biodiversity in gazetted areas, and may also have information and skills of value to such a monitoring effort.

For NTAE activities, IDEA should consider moving beyond its reliance on European Union regulations and reporting by the producers themselves to take care of environmental monitoring and mitigation. Support for the monitoring of water quality downstream from the rose growers could be considered as a starting point, so as to confirm that companies assisted by the project are truly not causing negative environmental impacts from the extensive use of chemical fertilizers and pesticides. Should such improved monitoring not be a ready option for any future IDEA activities, the Mission could consider a future monitoring role within the COBS (successor to APE) next phase. The DANIDA-assisted water quality and pesticide monitoring laboratory would be the obvious place to carry out the tests.

A starting point for any future monitoring process would be for the Mission to carry out a data inventory in order to determine just what relevant information exists and is being collected and

how it might serve for the data needs of the IDEA Project. NEMA, which has a mandate to develop a national environmental information system, would be the logical point of departure in seeking such information, followed by the Biomass Project and MUIENR.

Both in carrying out the data inventory and in developing a new monitoring system, it would be logical for IDEA to cooperate fully with NEMA. Firstly, the Monitoring and Information Office of NEMA would be able to make use of results of future IDEA monitoring activities by adding data to their developing environmental information system. Secondly, by ensuring that all businesses supported by IDEA respect the new national requirements that independent environmental impact assessments be carried out on all new business developments. This last point has additional pertinence since USAID is to support NEMA by capacity building for the development of national EIA competence. Thus it is logical to suggest that IDEA tighten up the monitoring of the environmental impacts of the NTAE firms that it supports and ensure that they are conforming to Ugandan legal requirements. It should be noted that standards have been formulated for effluent discharge and NEMA is working on comparable standards for air quality and noise pollution, to be completed by April 1999. IDEA should ensure that the companies with which it works are aware of their legal obligations.

5. Ghana

5.1 Mission and EMEMP Overview

The Ghana EMEMP was designed to address the possible environmental impacts of the Trade and Investment Program (TIP). TIP began in 1993, with funding of \$80 million in project and non-project assistance. The five-year program provided cash grants, local currency funding and project-funded technical assistance, as well as a substantial chunk of unrestricted non-project assistance funding to the Government of Ghana. It was designed to encourage increased exports of non-traditional products, through regulatory reforms which would reduce the transaction costs of exporting.

TIP was expected to affect the environment in a number of ways. The project focused on four resource-based sectors of the economy: salt, shrimps and prawns, forest-based industry (furniture), and nontraditional agricultural products (primarily pineapple). The salt industry involves mining and evaporation in coastal and riverine lagoons, so the environmental concern was with imbalances in lagoon ecosystems and harm to migratory birds. The major concern in the shrimp and prawn industry was overharvesting. Forest-based activities could involve unsustainable rates of harvesting, devegetation, and consequent problems with erosion and fertility. Pineapple production, which occurred mainly in the Densu River Basin near Accra, could cause both significant devegetation and pollution from agrochemicals.

The TIP EMEMP took an unusual approach, in that the Ghanaian government took a lead in its design and was given full responsibility for its implementation. The TIP initial environmental examination (IEE) was prepared in early 1992 by the head of the Ghana Environmental Protection Council (EPC) (Dorm-Adzobu 1992). It recommended a categorical exclusion for the program's technical assistance and institutional strengthening portions, and environmental impact reviews (EIRs) on salt mining, fisheries, forestry, and nontraditional agricultural exports. It also noted the need for an EMEMP to ensure that the project would be tracked and that midcourse corrections would be put in place to protect the environment should the need arise. With these (and several other) conditions, the TIP's policy reform components were given a negative determination.

The EMEMP document was prepared by Dorm-Adzobu and USAID's regional environmental advisor, Idrissa Samba (Dorm-Adzobu and Samba 1992). It listed general indicators that could be used to track environmental impacts of specific components of the project. It placed overall responsibility for implementation of the EMEMP in the hands of the EPC, and identified nine government institutions (including EPC) to take responsibility for specific areas of data collection and management. Funding for the EMEMP was to be provided by the government out of its own budget. Implementation was made a condition precedent for provision of the TIP NPA budgetary support to the government.

5.2 EMEMP Implementation

Obtaining clear information on the implementation of the TIP EMEMP has proven difficult, particularly as the consultants on this assignment were not able to go to Ghana. The short answer to what happened with EMEMP implementation is simple—“nothing.” We have tried to assess, insofar as possible, why not and what lessons can be learned from the experience.

At the start of TIP implementation, the enthusiasm of the Ghanaian government for taking on the EMEMP was a source of considerable satisfaction to USAID. This satisfaction quickly waned, however, as the data collection work simply was not done. The first EMEMP evaluation report (Samba and Amekor 1994) found that the agencies expected to collect the data in their areas of expertise had not received the requisite funding in order to do so. These funds were to have been passed from the Ministry of Trade to the Environmental Protection Agency (EPA), which was created from the EPC in 1994 as an advisory body to the Minister of Environment, Science and Technology. Funds were then to be transferred by EPA to the agencies with which it sub-contracted for data development. However EPA never received funds from the Ministry of Trade for this purpose, so most of the sub-contracted agencies did not begin work on the EMEMP.

The TIP EMEMP was designed at the same time as the Ghana Environment and Resources Management Project (GERMP), a major World Bank effort. GERMP included a significant environmental information systems component which may have hindered EMEMP implementation. Three of the agencies which were to provide EMEMP data were also involved with the much larger (and more lucrative) GERMP project; these were the agencies responsible for base map production, soil studies, and remote sensing. The relationship between the two projects was not clear at the time of the first EMEMP evaluation, since they were clearly related but were nevertheless separate efforts. From this distance (in time as well as space) it is not possible to tell exactly how GERMP and the TIP EMEMP might have been better coordinated. It would appear, however, that the USAID effort funded out of government funds could not compete for staff attention with the World Bank effort funded through donor support.

An assessment of environmental issues in Ghana conducted in 1995 (Gilbert et alia, 1995) also raised questions about possible links between GERMP and the EMEMP. The GERMP EIS work was managed through a Land Information Project Operating Committee (LIPOC), which was to coordinate data development and sharing efforts. Gilbert et al suggested that the EMEMP could have served as a pilot project for implementation of the GERMP-based EIS through LIPOC, instead of being a self-contained entity unconnected to the GERMP work. However, this may not have been realistic given the time frame for EMEMP data collection. The GERMP EIS approach involved a fairly long-term effort to build information systems infrastructure (such as compatible base maps, soils maps, land use suitability maps, and so on). While this could be of general interest to TIP and to USAID, it might not have been sufficiently detailed or available soon enough to meet EMEMP needs. (Personal communication, Y. Prévost)

The Gilbert report also raised the question of whether the data to be collected under the EMEMP were too broad, and therefore required more effort than warranted to collect. The authors recommended a significant cut-back in data collection, limiting it to the minimum needed to answer questions about causal relations between TIP-induced policy reforms and environmental degradation. Instead of the emphasis on data collection, they call for much greater emphasis on educating public officials about why the data are being collected and how they can be used to design policies which will respond to the impacts of the policy reforms.

The second EMEMP evaluation, conducted in May 1995 (Amekor and Samba, 1995) showed only marginal progress relative to the first evaluation. Funds for data collection still had not been released by the Ministry of Trade and Industry, and most of the agencies expected to collect data still were not doing so. Although implementation of the EMEMP was a condition precedent for release of TIP NPA budgetary support, however, neither this nor the previous evaluation recommended that funding be held up because of the delays, and USAID/Ghana did not choose to enforce the conditionalities.

Recognizing the failures of EMEMP implementation, in 1996 AID prepared a revised EMEMP (Perry et alia, 1996). The proposed plan called for much more limited and focused monitoring of five key sectors; pineapple and vegetable production, other horticulture, wood products, marine fisheries, and salt production. It called for specific activities intended to facilitate effective implementation of this reduced monitoring plan. The plan also recommended more transparent financial procedures in the hope of ensuring that the funds would really be made available to the agencies responsible for data development.

The revised EMEMP was not implemented, for several reasons. TIP had only one more year to go at the time the revised EMEMP was produced, so there was little time left to begin a monitoring program. The proposed monitoring was still considered too complex, especially with only one year in which to carry it out. Since neither the government nor USAID/Ghana had shown much interest in the EMEMP, and pressure to revise it was coming from USAID offices in Washington and Abidjan, there was little expectation that the revised EMEMP would continue beyond the TIP life of project even if it were implemented. Apparently these factors led to a decision simply to drop the EMEMP (Dworkin 1996).

The Ghana Mission moved to an entirely new approach to environmental impacts with the development of its strategic objectives in 1997. SO1, "Increased Private Sector Growth" incorporated the activities which had been part of TIP. An IEE was prepared, which considered how the different components of SO1 might affect the environment (USAID/Ghana 1997). The IEE recommended three environmental determinations:

- a categorical exclusion for most technical assistance, training, education, institutional strengthening, communications, and information exchange activities;
- a negative determination for the overall SO1, on the condition that the mission mitigate any anticipated negative environmental impacts; and

- a deferral for activities which could involve pesticide use, pending completion of a Programmatic Environmental and Economic Assessment.

It is the second recommendation which is new. Given the difficulty of identifying the environmental impacts of policy reform, one strategy for preventing such impacts is to simply assume they will occur, and prevent or mitigate them without using resources to determine whether they actually occur (Hecht, 1995). In other contexts where this approach has been suggested, USAID missions have hesitated to simply assume environmental harm is occurring with no proof. The TIP EMEMP experience, however, seems to have convinced the Ghana Mission that moving directly to mitigation may be easier than monitoring.

The IEE calls for a variety of mitigative activities to be undertaken in the course of SO1 implementation. Under RP1, “Improved Policy Environment and Financial Intermediation,” it calls for activities designed to strengthen participation of local institutions in policy analysis and dialogue. The suggested activities seem to be illustrative rather than more specific plans, so it is hard to assess how effective they will be. It is worth noting, however, civil society participation may hit a roadblock because of the lack of data on the environment and its links to the economy, so the Mission may again find that it needs to improve environmental information systems. Hopefully this will not look like “déjà vu all over again,” given the history of the EMEMP!

Under RP2, “Increased Private Enterprise Performance,” the IEE calls for building an environmental element into the institutional contract implementation, ensuring that the contractor understands environmental soundness to be one of the criteria for evaluation of his or her work. Again, the precise activities intended are not clearly specified, so it is too early to tell whether this is likely to be effective. The pesticide assessment is also called for under RP2; it may provide an opportunity to develop a more precise set of strategies through which to ensure the environmental soundness of the private sector activities facilitated under this RP.

Another innovative element of the SO1 approach is that the modest environmental monitoring which is proposed is part of the overall M&E plan, not a separate activity. This suggests that environmental impacts, to the extent that they are observed, are an element in the overall evaluation of the success of the project, not an unrelated constraint that can easily be overlooked. This may strengthen commitment to the limited environmental monitoring which is recommended.

5.3 Discussion

The Ghana experience raises a number of interesting points for consideration, especially in contrast with the other countries studied in the course of this assignment. There are some interesting parallels to the Malawi experience, in that completion of some of the proposed activities depended on government funds which were not provided. In both cases, the program which generated the EMEMP provided substantial NPA budgetary support to the government, and USAID expected that some of these funds would be routed to EMEMP support. However, the fact that in neither case did

this happen clearly suggests that much more effort will be required before governments are likely to allocate their own funds to this kind of environmental monitoring of their own volition.

The difficulties linking the EMEMP to the GERMP EIS work suggest that using a small project like the EMEMP to complement, build on, and add to a much broader EIS activity may be more difficult than anticipated. If USAID could provide broader support to EIS efforts, as it has in Madagascar, the result may be the development of broad-based information infrastructure which could provide the underpinnings of future AID monitoring and evaluation systems. However, this is different from the more precise information required to assess the environmental impacts of something like pineapple cultivation. The existence of EIS infrastructure may provide base data to which specific data collected to monitor a specific issue can be linked; for example, general soils information or base maps. However, it is not likely to replace the more specific primary data collection called for by the EMEMPs. At best, it may help ensure that the data collected for EMEMP work will be compatible with other data collected in the country, so they may be usable by others in the future.

In Ghana, as in Malawi, a broad data development effort was conceived, and then charges were levelled that it would not actually succeed in showing the causal relations that it hoped to demonstrate. Since the data were never even collected in Ghana, it is not as clear that that would have been the outcome; however it seems plausible. This result, combined with the difficulties linking the EMEMP to the GERMP EIS, suggests that a two-tiered approach to environmental monitoring may be useful. On the one hand, AID may want to support broad-based development of EIS infrastructure, along the lines of the GERMP EIS work. This would help build the base data needed by everyone interested in environmental and natural resource issues; it is analogous to having a census of population or other fundamental data used for many different purposes. On the other hand, when dealing with projects like TIP or the SO1 private sector activities, AID may want to undertake very limited, narrowly focused environmental monitoring work designed to answer a few specific questions of importance to AID and perhaps of less importance to the government. The better the base data, the easier this will be; hence the two-tiered approach rather than one focused only on answering AID's questions.

The possibility that the EMEMP was competing with GERMP EIS activities suggests that Ghana was confronting something analogous to Malawi's "workshop problem." GERMP had outside funding, and included resources for training, new equipment, workshops, and similar extra support. The EMEMP, in contrast, was supposed to be funded out of government resources, and could not provide nearly the perquisites that GERMP could for government employees. Moreover, it was a relatively small activity for each agency, which even if it had been properly funded would have brought in quite limited resources. Therefore when time was short, it is not surprising that their time would go to the more lucrative GERMP. As in Malawi, this suggests that EIS activities will never have priority if they are to be funded through the government; not only will the funds not be available, but the staff won't be there either.

A quite different issue concerns why the Ghana Mission never enforced the conditions precedent which called for TIP NPA funding to be contingent on implementation of the EMEMP.

This could be understood in two different ways. One is that the Mission simply was never committed to the environmental monitoring, and therefore was unwilling either to interrupt an ongoing project because of them, or to provide the time and effort needed to ensure that the EMEMP would be implemented. If this is the case, then the problem for the future is how to ensure that missions take environmental conditionality or objectives seriously, rather than perceiving them simply as something to be ignored when they become troublesome.

A slightly different interpretation is also possible, though. This is that the Mission may have recognized that the EMEMP was a failure, but felt that matters would not be helped by enforcing the conditionality. It is possible that the whole TIP program might have been derailed had the conditions been enforced, causing considerable harm in other areas while not benefiting the environment. Alternately, enforcing the conditions might have forced the government to make some minimal effort to implement the EMEMP, but it would create hostility towards AID and towards environmental monitoring which would set TIP, the Mission, and the environmental cause back in the long run. Therefore they may have felt that the possible harm of enforcing the conditions could outweigh any possible environmental benefit of doing the required monitoring.

Whichever interpretation is correct, this suggests that the use of conditions precedent is not an effective tool for bringing the government into environmental monitoring. Strategies which rely on persuasion, education, and incentives are likely to be more effective than those which rely on conditions and enforcement in prodding governments to take responsibility for the environmental implications of their actions.

5.4 Where to go from here

The future of environmental monitoring and mitigation activities in Ghana will depend on how the recommendations in the SO1 IEE are being implemented. This, in turn, is likely to depend in large measure on how committed the Mission is to ensuring the environmental soundness of its private sector activities. As the Madagascar case suggests, when a mission has absorbed the importance of environmental soundness, it will automatically build this into its activities and include environmental criteria in its evaluation of its contractors. The Ghana Mission had not done this during the TIP EMEMP era; it will remain to be seen how fully they are prepared to do it now.

6. Synthesis and Conclusions

The assessment of EMEMP efforts in four countries has offered a number of different models for how to address the environmental impacts of economic policy reform, and suggests some of the strengths and weaknesses of each. Before considering them, a few more general points may also be of interest.

First, recall that two distinct problems led to the original conception of the EMEMP. The first was the development of projects which consisted of a series of smaller sub-projects, whose content was to be determined during the life of the project. In this situation it was not possible to project environmental impact in advance, so an EMEMP was recommended. This seems to have been a fairly practical strategy, at least based on the Madagascar experience. The sub-projects there involved road rehabilitation. Following the requirement to address environmental impacts on a case-by-case basis, the project used environmental screening forms to identify possible impacts in advance and design roads to prevent them. They then did modest after-the-fact monitoring to ensure that no harm was, in fact occurring. The success of this strategy suggests that, at least where all of the sub-projects are of the same type, a simple screening form may be adequate to address environmental impacts.

The second problem leading to the EMEMPs was the environmental impacts of policy reform or of projects which provide technical assistance designed to encourage trade and investment. Most of the EMEMP work is of this type. The diversity of strategies seen and the difficulties encountered with all of them suggest that this problem is rather intractable and does not admit of a single simple solution. The list of models discussed in the country sections of this report and synthesized below address this issue.

A second general point concerns the attitudes of AID missions to environmental issues and monitoring. Based on the four countries considered in this paper, the attitudes of the mission director and key personnel seem to be crucial to the effectiveness of the environmental monitoring activities. The Madagascar Mission was thoroughly committed to environmental protection, biodiversity conservation, and the sustainability of its economic development activities. Consequently, they were open to broad support for national environmental information systems, as well as to integrating environmental screening mechanisms into new projects even without external pressure. In contrast, the other missions visited were focused more on economic development than on environmental concerns or sustainability. It was much harder to encourage the staff responsible for private sector or agricultural development objectives to address the linkages between their work and the environment. The uniqueness of Madagascar's biodiversity resources may be one explanation for that mission's stronger focus on environment. However, this leaves open the question of how to build support for these concerns in other missions whose resources are less unique.

This being said, the four countries considered suggest a range of options for how to address the environmental impacts of policy reform. They are presented here beginning with the most narrowly focused and moving towards the broadest.³

Narrowly focused research

This term is used to refer to the village-level studies initiated by the Malawi MEMP in 1988. This approach basically reflects a decision to use the minimum effort feasible to answer specific questions of concern to USAID, without attempting to use the research to build capacity in government, leverage other contributions to related work, generate multiplier effects, or link to similar efforts elsewhere.

Although this work is not yet complete, it looks like this approach may have two distinct strengths. First, where AID missions feel they must understand the environmental impacts of their activities, this may be the most efficient and cost-effective way to do so. Second, in relying on case studies and interviews rather than primarily on statistical data, this approach may provide more insight into possible causal links between policy change and environmental degradation, and so offer a better handle on how to address the problems.

However, it must be borne in mind that the efficiency of this approach depends on *not* trying to take advantage of possible links to related activities or build capacity in the government to do the work. While such links may be interesting, building them will significantly increase the resources and time required to answer the questions of interest to AID.

In-depth research program

The strategy initially followed in Malawi, that recommended in Ghana but never implemented, and that recommended in the Hecht (1995) work on Chad, was to undertake an in-depth research program designed to identify in a fairly reliable way the causal link between the trade program and resulting environmental harm. This was never implemented in Ghana or Chad; the Malawi experience suggests that it simply may be too unwieldy to be cost-effective. The logic for these activities in both Ghana and Malawi was that they would provide an opportunity to train civil servants, build environmental monitoring capacity in the government, and contribute to the creation of a broader national environmental information system. However, this really did not work as hoped. In neither county did the government take responsibility for the activity, despite initial expressions of interest. Were there convincing evidence of a strong commitment by government to the issues of concern to AID, then this strategy might work; however the experience to date should make us wary.

³ It is interesting to note that a somewhat similar typology emerged in 1994 from the work of a team which was asked to design an environmental monitoring system for the Chad Agricultural Trade Policy Reform Program (Hecht 1995). That group considered a number of the options which have since been tried out under the EMEMPs. It is perhaps indicative of our ability to learn from experience that the options which looked the best for Chad, when none of them had been tried, are not those which seem the most promising after five years of EMEMPs.

It is hard to establish clear guidelines which differentiate *a priori* between the focused research finally undertaken in Malawi and the in-depth research attempted there earlier and recommended for other countries. A few rules of thumb may be helpful, though. One is to use the level of effort (or financing) as the way to ensure that research does not become unworkably complicated. The final Malawi work probably cost at most a few hundred thousand dollars, whereas the original catchment work cost millions. Putting a financial or level of effort ceiling on the work may ensure that it cannot grow too cumbersome. Note, however, that limiting the time frame would not be a good idea. Since the impacts may take some time to emerge, occasional data collection over several years may be required to obtain the desired results.

Another way to distinguish between complex in-depth monitoring programs and narrower more focused ones will be the use of resources for training, to build capacity in public agencies, or to establish linkages to other projects. Similarly, the expectation that host country officials will carry out much of the work may serve as a flag that the project could be moving from a quick effort to one which will require a major time commitment. While these are all laudable objectives, they will require substantial resources in time and money. Missions should think carefully before they decide to go this route, and make sure that the host country is seriously interested in the same issues as AID.

Link the work to broader EIS work

A related strategy is to link a monitoring project driven by AID information needs to ongoing work to develop a national environmental information system. This could be done in two different ways. One is to try to use the EMEMP analytical work as a pilot project through which to help the government build capacity and databases, working towards development of a national EIS. While this could be an interesting strategy, it could encounter much the same problems as the in-depth research described above. Missions considering this approach should expect to make substantial investments in activities not directly related to answering the questions of interest to AID.

This approach was proposed in Ghana, where the EMEMP work could have been linked to the World Bank's GERMP project (Gilbert et alia, 1995). Establishing such a link proved difficult, however. At the time of EMEMP design, GERMP was just getting underway. It did not yet have data to offer to other projects, nor was there a government agency with sufficient EIS expertise to be able to do analytical work on contract to other projects. Rather, the government agencies most involved with EIS work were just getting up to speed, and were putting much of their time into the well-supported World Bank project. Consequently, they were not interested in working on the EMEMP, which they may have perceived as a distraction.

A second strategy for linking EMEMP analytical work to a national EIS might be feasible if the EIS is already fairly well developed and routinely being used by government, projects, and donors. In this case, the EMEMP analysts could make use of EIS data, combining it with their own, more specialized data collection, in order to address the issues of interest to AID. There might exist an experienced government agency which could undertake analytical work for the EMEMP or other clients, operating essentially as a consulting firm. would. The Uganda Forestry Department, which is implementing the biomass study, hopes to operate in this way in the future, bringing in enough

revenue to support the continued activity of the project. However, at present there are no organizations equipped to operate in this way in the countries studied.

Launch a broad monitoring activity within the USAID Mission

Another approach is suggested by the situations in both Malawi and Uganda, where environmental monitoring needs cut across two strategic objectives. The Mission could establish a monitoring program targeted at tracking and mitigating the environmental implications of its whole program activities, rather than any one project. This strategy has not been tried in any of the countries visited, but it might be considered a possibility by several of them.

This approach is quite appealing, because it would firmly establish the mission's responsibility for environmental monitoring and mitigation, and would be evidence of a mission-wide cross-cutting commitment to sustainable development. Such a monitoring program might actually cut across all SOs. Alternately, it might be part of a democratization SO, on the assumption that public access to information will help build democratic processes.

This strategy may raise many of the same questions as the in-depth monitoring, and it might be even more difficult to implement. In a mission with a range of different private sector and natural resource management activities, a number of elements might become components of such a program:

- Narrow-focused or in-depth monitoring of the environmental impacts of specific projects or activities. There could be a great many different activities calling for such monitoring, and managing a number of discrete monitoring programs could become very complex. One single integrated monitoring program might not be able to respond to all the different needs; there might be no alternative to simply stringing together a series of separate programs.
- Broad monitoring of the country's environment. This would probably have to be linked to government efforts to build a national EIS.
- Linking NRM activities to private sector activities in order to use the former to mitigate the impacts of the latter. This seemed to make sense in the case of Uganda, and was of interest to the NRM staff in the Mission. However, it is not clear why it needs to be part of a monitoring program; such linkages may make good sense irrespective of the Mission's environmental monitoring portfolio.

While at first glance it seems quite interesting to build a Mission-wide environmental monitoring activity, when we begin to consider it more precisely, it seems very hard to define it without it becoming even more complex institutionally than the in-depth EMEMP work of Malawi and Ghana. Rather than trying to integrate the three components mentioned above into a single monitoring program, it might be easier to deal with them separately; do narrow focused monitoring of specific impacts, support a national EIS, and integrate NRM work with mitigation of the environmental impacts of private sector activities.

Support development of a national EIS

Instead of trying to link government EIS needs with those of AID, it may be more effective from the country's perspective for AID to simply support the development of a national EIS. The goal would be to help the country build information infrastructure needed in order to monitor the state of the environment and its contributions to national development. As discussed in the Malawi case, this should involve a long-term commitment by AID to help the country build and maintain base data on such issues as land use, vegetative cover, and soils, as well as building the digital base maps which are essential for all spatial databases developed by different projects to be compatible. It could also include development of data and analytical capability needed for environmental accounting, to ensure that environment-economy linkages are clearly established.

Such an effort does not provide quick results, nor is it likely to be a government priority for allocation of their own funds; this is why such investments have typically not been made in poor countries. However, as the FEWS model suggests, a long run donor commitment to this kind of activity is likely to pay off for both donors and the host government as it becomes easier to respond to all kinds of information needs. The more such infrastructure is developed, the easier is to respond to questions as they arise. Moreover, as such infrastructure is built, it can be applied well beyond the tracking of environmental impacts or the design of environmental projects. It will be a key tool in understanding the role of the environment in the economy, in building environmental accounts, in planning for efficient land and resource use, and in planning for economic development. As with the investment in a census of population, the payoffs will come through the ease of addressing a wide range of economic and environmental issues, not through any one particularly dramatic result.

AID support for national EIS development could fit within environment and natural resources strategic objectives, or within democratization objectives. The latter makes sense to the extent that one key element of a democratic system is the ability of both government and civil society to access information and use it to make or advocate particular policy decisions. However, this approach could encourage the staff of projects with negative environmental impacts to feel it isn't their problem, because someone else is handling it. If part of our goal is for all AID staff to understand environment and sustainability criteria to be measures of the success of private sector development strategies, this approach to environmental monitoring may work in the opposite direction.

Just mitigate

A quite different approach, the one eventually selected by Ghana, is to drop the idea of actually identifying environmental impacts, assume they will occur, and design the project to prevent or mitigate them. This is appealing from several perspectives. Preventing environmental harm is clearly preferable to allowing it to happen and then investing in trying to identify it. Where the total resources available for EMEMP activities are limited, it may be more cost-effective to prevent or mitigate, rather than devoting any time or funds to monitoring.

Moreover, it is not clear from the experience of the four countries considered in this report that identifying actual impacts is even possible, and certainly not clear that it is possible at low cost.

In that case, monitoring is only useful if it is intended to meet broader AID or government needs; otherwise, the only logical strategy is to just mitigate.

The risk of this approach is that the mitigation activities may become quite disconnected from the projects which spawned them, and the focus of the activity may be lost. This is suggested by considering the activities included in the Ghana IEE. The negative determination is granted essentially on condition that the Mission buy into the concept, but the exact activities to be carried out are not specified. It is easy to imagine that once the Mission is implementing its program, the logic for why those activities have been included, and their link to the private sector activities, will readily be forgotten. This is particularly likely as the people who will have the expertise needed to implement private sector activities will not be those working on participation and democratization or on or natural resources management. Again, this is an approach which may work against integrating the need for sustainability in the design of private sector activities.

Conclusions

This review of EMEMP experiences suggests that no one approach will meet all needs for environmental monitoring, at the project, mission or national level. None of the approaches tried in the four countries studied has been ideal; each has involved trade-offs between AID's needs and those of the government, between answering a narrow question quickly and building government capacity or infrastructure to address a range of broader questions. Missions which are concerned about the environmental impacts of their activities should consider how each of these could be useful to them. They should also consider strategies which involve combining several different approaches; for example, national EIS support with narrowly focused monitoring or with "just mitigating."

Similarly, we cannot draw a general conclusion about the utility of "the EMEMP approach." The EMEMP was a label given to a process which was required when AID confronted activities whose environmental impacts were hard to anticipate. It was not a clearly defined set of activities or a precise strategy whose effectiveness can be tested and which can then be adopted or rejected. The problem of activities whose environmental impacts are unpredictable will continue to exist, whether we label our response an EMEMP or something else. We must not fall into the error of assuming that because we have labelled our strategy "EMEMP," therefore we have designed a solution which solves the problem. Rather, we must learn from the strategies tried in these four countries, and gradually understand better the different dimensions of the problem and the possible solutions. In this way we will be able to develop more informed approaches to deal with the issue in each context, reflecting the interests and priorities of the projects in question, the mission, and the government.

List of Projects for which EMEMPs Were Required

Country	Project
Benin	Technical Training for Primary School Leavers and Dropouts (Songhai Center)
Botswana	Regional Natural Resource Management Project – Botswana Component
Cameroon	Project for Environmental Reform (CAMPER)
Chad	Agricultural Trade Policy Reform
Ethiopia	Development of Cooperative Markets Program
Gambia	Agriculture and Natural Resources Project
Ghana	Trade and Investment Project
Guinea	Guinea Natural Resources Management Project
Kenya	Private Enterprise Development II
Madagascar	Knowledge and Effective Policies for Environmental Management (KEPEM) Amber Mountain ICDP, Andohahela ICDP, Masoala ICDP – Phase II, SAVEM Commercial Agricultural Promotion Participation and Poverty Project Financial Market Development Market Infrastructure Improvement
Malawi	Agricultural Sector Assistance Program Natural Resource Management and Environmental Support Program (NATURE)
Mali	Opportunities for Entrepreneurs Mali Forestry Reform Project/Program Policy Reform for Economic Development
Mozambique	Private Sector Support Program Increased Rural Incomes Program
Niger	Agricultural Sector Development Grant II – Gouré Interventions Project Agricultural Marketing Export Promotion project Agricultural Sector Development Grant Natural Resources Management Intervention

Country	Project
Senegal	Community Based Natural Resources Management Rice Structural Adjustment Program/Project Southern Zone Water Management Project
South Africa	Private Sector Housing Guarantee Program
Tanzania	Financial Enterprises Development Participatory Environmental Resources Management
Uganda	Agricultural Non-traditional Export Promotion Program Investment in Developing Export Agriculture
Zambia	Agricultural Sector Liberalization
Zimbabwe	Regional Natural Resources Management Program – SARP – bilateral component of CAMPFIRE Grain Marketing Reform Support Program

Source: Africa Bureau IEE and BEO Actions and Implementation Tracker, 1994–1997

References

- Agribusiness Development Centre, Uganda's Investment in Developing Export Agriculture (IDEA) Project, July 1996, "Environment Assessments of NTAE Growers and Firms Assisted by ADC."
- Agribusiness Development Centre, Uganda's Investment in Developing Export Agriculture (IDEA), November 1997, Manual for Training of agri-input dealers.
- Agribusiness Development Centre, Uganda's Investment in Developing Export Agriculture, 1999, Fifth Annual Workplan, April 1, 1999 through February 23, 2000.
- Amekor, Emmanuel M. K. (TIP/EMEMP Implementation Coordinator, Ghana Environmental Protection Council) and Idrissa Samba (Regional Environmental Advisor, USAID/REDSO/WCA), March 1994, "Evaluation of the Implementation of the Ghana Trade and Investment Program Environmental Monitoring, Evaluation and Mitigation Plan (EMEMP)" First Evaluation, March 1994. Prepared for USAID/Accra, Ghana.
- Amekor, Emmanuel M. K. (TIP/EMEMP Implementation Coordinator, Ghana Environmental Protection Council) and Idrissa Samba (Regional Environmental Advisor, USAID/REDSO/WCA), May 1995, "Evaluation of the Implementation of the Ghana Trade and Investment Program Environmental Monitoring, Evaluation and Mitigation Plan (EMEMP)" Second Evaluation, May 1995. Prepared for USAID/Accra, Ghana.
- Anon., March 1997, Unsigned Email to Carl Gallagos and Walter Knausenberger, 21 March 1997 (Madagascar).
- Bingham, Charlotte, 1997a, Unsigned Email to Carl Gallagos and Walter Knausenberger, 21 March 1997.
- Bingham, Charlotte, 1997b, "Madagascar TDY Trip Report, 16-23 March 1997."
- Dorm-Adzobu, Clement, May 1992, "Initial Environmental Examination, Ghana Trade and Investment Program" (Accra, Environmental Protection Council of Ghana) Included as Annex O of the TIP PAAD
- Dorm-Adzobu, Clement and Idrissa Samba, June 1992, "N.T.E. Environmental Monitoring, Evaluation and Mitigation Plan (EMEMP)" Prepared for USAID/Ghana Trade and Investment Program, Accra. Included as Annex O of the TIP PAAD.
- Dworkin, Daniel, April 1994, "Considerations for ASAP II Monitoring." Trip report, April 12-15, 1994.

- Dworkin, Daniel, June 1996, "Quick draft–Comments on the revised EMEMP in Ghana dated May 1, 1996."
- Gilbert, Frederick, James Perry, and Greg Booth, September 1995, "A Preliminary Assessment of Environmental Issues in Ghana." Prepared for USAID Ghana.
- Eastman, J. Ronald and James Toledano, January 1996, "GIS Technology Transfer: An Ecological Approach." SARSA/ Clark University Labs for Cartographic Production and Geographic Analysis for USAID Africa Bureau/ Office of Sustainable Development/ Productive Sector Growth and Environment Division.
- Gilbert, Frederick E., Jaes Perry, and Greg R. Booth, September 1995, "A Preliminary Assessment of Environmental Issues in Ghana." Prepared for USAID/Ghana.
- Government of Malawi, Department of Research and Environmental Affairs, June 1994, "National Environmental Action Plan."
- Government of Malawi, Ministry of Research and Environmental Affairs, February 1996, "National Environmental Policy."
- Government of Malawi, August 1996, "An Act to make provision for the protection and management of the environment and the conservation and sustainable utilization of natural resources and for matters connected therewith and incidental thereto." Published in the Malawi Gazette Supplement, 16 August, 1996 (No. 7C)
- Government of Malawi, Ministry of Research and Environmental Affairs, September 1996, "Malawi Environmental Monitoring Program, 1996-1998 Workplan."
- Government of Malawi, Ministry of Research and Environmental Affairs, Environmental Affairs Department, December 1997, "Guidelines for Environmental Impact Assessment."
- Government of Malawi, Environmental Affairs Department, June 1998, Environmental Support Programme. Volume 1: Context and Programme Description.
- Government of Malawi, Environmental Affairs Department, July 1998, "State of Environment Report for Malawi, 1998."
- Gyamfi-Aidoo, Jacob, undated, "A network approach to environmental information management in Ghana" (Accra, Ghana: Environmental Protection Council)
- Gyamfi-Aidoo, Jacob, undated, "Review of the Monograph–'Adjustment, Agricultural Marketing and the Environment: the case of Ghana.'" (Legon, Ghana: Remote Sensing Applications Unit, University of Ghana)

- Hecht, Joy E., August, 1994, "Environmental Monitoring, Evaluation, and Mitigation Plans: A Review of the Experiences in Four African Countries." Prepared for Division of Productive Sector Growth and the Environment Office of Sustainable Development Bureau for Africa U.S. Agency for International Development by Environmental and Natural Resources Policy and Training (EPAT) Project Applied Research, Technical Assistance and Training Winrock International Environmental Alliance, Arlington, Virginia.
- Hecht, Joy E., 1995, "Monitoring the environmental impacts of trade policy reform in Africa: lessons from Chad." *Ecological Economics*. 13 (1995) 155-167.
- Henninger, Norbert, March 1996, "Appraisal of the Malawi Environmental Monitoring Programme (MEMP)." (Washington, D.C.: World Resources Institute)
- Knausenberger, Walter, 1994, "Madagascar Commercial Agricultural Promotion Project Initial Environmental Examination." USAID, Washington DC.
- Loken, Eric, 1993, "Environmental Analysis: Madagascar Commercial Agricultural Promotion Project (CAP, 687-0118) and Related Agribusiness Support Activities of USAID/Madagascar." Washington DC.
- Loken, E., Bingham, C., Enders, M., Gupta, S., Hanchett, R. & Herlehy, T., 1996, "Programmatic Environmental Assessment (PEA) of the Rural Road Rehabilitation Activities." USAID, Bureau for Africa, Office of Sustainable Development, Division of Productive Sector Growth and Environment, Washington DC 20523.
- Marks, M. & Ramaromanana, O., 1999, "LDI (Landscape Development Initiatives): Monitoring & Evaluation Plan." Prepared for USAID/Madagascar and Chemonics International Inc., Washington D.C.
- Mohamoud, Yusuf and W. Kent Burger, March 1998, "An Overview of the Malawi Environmental Monitoring Programme's Small Catchment Monitoring Component with Recommendations to Meet Malawi's National Environmental Monitoring Requirements." Draft.
- Morton, Ashley, Andrew Sergeant, and Michael Smedley, January 1994, "Environment Impact Review of the Investments in Development of Export Agriculture (IDEA) Project (617-0125) and Agricultural Nontraditional Export Promotion (the) Program/Project (617-0113/0114)" For USAID/Uganda
- Perry, Jim, Jane Marks, Emmanuel M. K. Amekor, and Idi Samba, May 1996, "Revised Design and Implementation Plan for the Environmental Monitoring, Evaluation and Mitigation Program (EMEMP) in Ghana." Prepared for USAID Ghana.
- Republic of Uganda, Ministry of Natural Resources, National Environment Action Plan Secretariat, June 1995, "Environment Investment Program Volume II part A"

Republic of Uganda, 19 May 1995, The National Environment Statute, Statutes Supplement No. 3.
Slack, Donald C., October 1996, “Malawi Environmental Monitoring Program, Watershed Monitoring, End of Mission Report.” Draft.

Ssemwanga Centre for Agriculture and Food, Ltd., Jan/Feb 1997, “The Business- and People-Level Impact of IDAE Project Interventions on the Production and Marketing of Roses (With emphasis on Ziwa Horticultural Exporters, Nile Roses and Nsimbe Estates rose farms).” Prepared for the Agribusiness Development Centre (ADC), Investment in Developing Export Agriculture (IDEA) Project, Kampala, Uganda.

Temel, Tugrul (Rutgers University), Terry L. Roe (University of Minnesota), and Edmund Tavernier (Rutgers University), May 1995, “Assessing Sector-Specific Environmental Impacts of Adjustment Policies in Ghana: A Systems Methodology” Unpublished paper.

Tobin, Richard, 1996 (undated), “Malawi’s Environmental Monitoring: A Model that Merits Replication?” Prepared for the Division of Productive Sector Growth and the Environment, Office of Sustainable Development, Bureau for Africa, USAID. (Arlington, VA: EPAT Project, Winrock International Environmental Alliance)

Vinlaw Associates, Limited, July 1998, “Impact Assessment of Maize and Bean Program, Final Report.” Prepared for Agribusiness Development Centre, Uganda’s Investment in Developing Export Agriculture.

USAID/Ghana, 1997, “Initial Environmental Examination or Categorical Exclusion” Prepared for Strategic Objective : Increased Private Sector Growth.

USAID/Madagascar, 1998, Madagascar—FY 2000 Results Review and Resource Request.

USAID/Malawi, “Results Review and Resource Request FY2000” Part 1, Results Review.

USAID/Uganda , 1996, USAID Country Strategic Plan for Uganda FY 1997-2001, November 13 1996.

List of People Contacted

General Contacts

USAID/Washington

Paul Bartel
Walter Knausenberger
Mike McGahuey
Tony Pryor

World Bank

Yves Prévost, AFTE1 (Africa Technical Environment)

Madagascar

USAID

Lisa Gaylord, Office of Natural Resources (RP2)
Helen Gunther, Director of Office of Natural Resources (SO1)
Lynne McCoy, Office of Natural Resources (RP1)
Adèle Rahelimihaandralambo, Monitoring & Evaluation Specialist
Josua Razafindretsa, Mission Environmental Officer

ANGAP (National Parks Service)

Jocelyn Rakotomalala, Director Ranomafana National Park

Chemonics

Sally Cameron, Project Administrator for Africa

Commercial Agricultural Promotions Project

Chris Juliard, COP
Olga Ramaromanana, Monitoring & Evaluation Specialist

Landscape Development Interventions Project

Jean-Robert Estimé, COP

MIRAY Consortium

Patrick Brenny, Director PACT
Jean-Michel Dufils, GIS Expert
Jean-Paul Paddock, Director WWF
Sahondra Radilofe, Scientific and Technical Director
Zo Lalaina Randriarimalala, Coordinator Monitoring & Evaluation

Office National pour l'Environnement

Jean Roger Rakotoarijaona, Program Director
Tovondriaka Rakotobe, Manager of EP II

Malawi

USAID

Robert Luneberg
Wayne McDonald
Steven Muchira

Clark University

Davison Gumbo
James Toledano

Danish Embassy

Mogens Laumand Christensen, Counsellor

FEWS Project

Evance Chapasuka, Assistant FEWS Field Representative
Sam Chimwaza, FEWS Country Representative

Ministry of Agriculture and Irrigation

Mishack Kapila, Department of Land Resources and Conservation
Vincent Mkandawire, Department of Land Resources and Conservation
Scott Simons, Advisor

Ministry of Forestry, Fisheries and Environmental Affairs

Alex Banda, Department of Environmental Affairs
R. P. Kabwaza, Director of Environmental Affairs
Aloysius Kampewerwe, Department of Environmental Affairs
John Ngalande, Department of Forestry

Ministry of Water Development

Mr. Chilwa, Chief Hydrologist, Water Resources Division

NATURE Project

W. Kent Burger, Field Coordinator, Malawi Environmental Monitoring Assistance Program
Tony Seymour, Policy Advisor

Uganda

USAID

Karen Menczer, Mission Environment Officer
Daniel Moore, Environment/Natural Resources Team Leader
Ron Stryker, Agriculture and Economic Growth Team Leader

Action Program for the Environment, Grants Management Unit

Jane Kisakye
Ray Victurine
Abubaker Wandera

Agribusiness Development Centre, IDEA Project

Clive Drew, Chief of Party
Peter Wathum, Monitoring and Evaluation Specialist

IUCN Uganda Country Office

Alex Muhweezi, Head

Makerere University Institute for Environment and Natural Resources

Dr. P. M. B. Kasoma, Ag. Director
Derek Pomeroy

Ministry of Water, Lands and Environment

Ali Mohammed Karatunga, Environmental Systems Analyst, Forest Department National Biomass Study

Frederick William Kigenyi, Deputy Commissioner for Forestry

Paul Mafabi, Manager, National Wetlands Conservation and Management Programme

National Environment Management Authority

Dr. Henry Aryamanya-Mugisha, Deputy Executive Director

Elizabeth Gowa, Information Communication Officer

Uganda Wildlife Society

Dr. Moses Isooba, Executive Secretary

Wildlife Clubs of Uganda

Samson Werikhe, National Co-ordinator